

North American Potash Deliveries Gain 4.7% in 1956

**U.S. Deliveries for
Agriculture Show
Decrease from 1955**

— See Tables on Page 5 —

WASHINGTON—Deliveries of potash in North America by the seven leading American potash producers and the importers during 1956 amounted to 3,932,527 tons of salts containing an equivalent of 2,307,961 tons K₂O, according to the American Potash Institute. This was an increase of 103,370 tons K₂O or 4.7% over 1955.

Deliveries for agricultural purposes in the continental U.S. for 1956 were 872,704 tons K₂O, a decrease of 5,85 tons under 1955. Canada received 9,280 tons K₂O, Cuba 14,647 tons, Puerto Rico 20,192 tons and Hawaii 3,358 tons. Exports to other countries amounted to 162,871 tons K₂O.

In this country, agricultural potash was delivered in 47 states and the District of Columbia. Illinois with nearly 200,000 tons K₂O was the leading state followed in order by Ohio, Indiana, Georgia, Florida and Virginia, each taking more than 100,000 tons K₂O during the year. Due to shipments across state lines, consumption does not necessarily correspond to deliveries within a state.

Agricultural potash accounted for nearly 95% of deliveries. Muriate of potash continued to be by far the most popular material, comprising over 92% of the total K₂O delivered for agricultural purposes. Sulphate of potash and sulphate of potash magnesias comprised the remainder.

Deliveries for chemical purposes in 1956 were 189,047 tons of muriate of potash containing an equivalent of 18,915 tons K₂O and 11,874 tons of sulphate of potash containing 5,994

(Continued on page 5)

Only 21 Medflies Trapped in Florida During February

WASHINGTON—Only 21 adult Mediterranean fruit flies—lowest monthly "take" so far in the 10-month eradication campaign—were found during February in 46,000 survey traps in Florida, the U.S. Department of Agriculture has reported.

This compares with 82 of the pests found in January, and more than 5,700 caught in only 4,100 traps last June, soon after the co-operative federal-state eradication campaign began.

The 21 Medfly adults, plus 171 immature flies, found during February represent 4 recurrences of finds in insecticide-sprayed areas of Dade, Lee, Hillsborough and Sarasota counties, and 3 new infestations in Pasco and Hillsborough counties. No new counties were found invaded by the pest.

Only 167,500 acres, including multiple sprayings in some areas, were treated with insecticides by aircraft in February. Last July, at the height of intensive spraying in the Miami area, an aggregate of almost 1.5 million acres was sprayed during a single month. All aerial treatments since October, 1956 have been made under state pest control contracts. Almost 800,000 acres have been treated with insecticides—most of them several times—since the alien insect was found in Florida last April. The multiple treatments have brought the aggregate number of acres sprayed to more than 6 million.

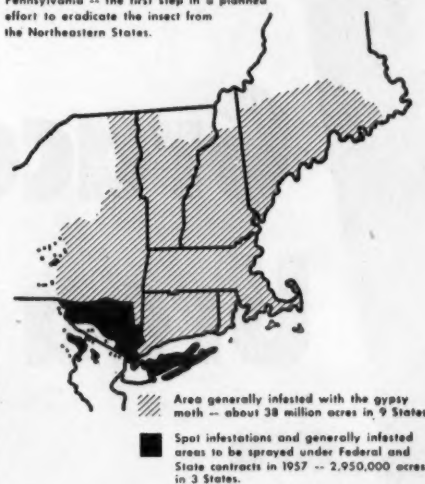
Acreage Reserve

WASHINGTON—Through March 15 a total of 919,000 agreements had been signed placing 20,354,344 acres in the acreage reserve part of the soil bank. By crops, the sign-up covers 4,497,483 acres of corn, 2,985,394 acres of cotton, 178,668 acres of rice, 78,102 acres of tobacco, and 12,614,697 acres of wheat, including winter wheat.

USDA Plans Major Spray Program to Kayo Gypsy Moth

ATTACK ON THE GYPSY MOTH

Aerial spraying against this pest of forest and shade trees begins in April on about 3 million acres in New York, New Jersey, and Pennsylvania—the first step in a planned effort to eradicate the insect from the Northeastern States.



WASHINGTON—The U.S. Department of Agriculture March 30 announced plans for a federal-state co-operative spray program this spring to eradicate the gypsy moth from almost 3 million acres of forest land in parts of New York, New Jersey and Pennsylvania.

Spraying against this destructive forest pest from the air with DDT is scheduled to begin about April 15 and will continue to mid-June. The insecticide will be applied at the rate of one pound in one gallon of light oil to each acre treated.

Area-wise, this will be the largest single aerial spraying job ever conducted in the U.S. Invitations to bid have been issued to contractors of aerial spray work. The spray planes, under strict supervision, will operate when weather is favorable for 3 to 4 hours daily, beginning shortly after dawn.

Areas to be sprayed (see map) include:

New York—An estimated 2,540,000 acres, including all of Suffolk County and part of Nassau County on Long Island; all of Putnam County; most of Westchester, Sullivan, Rockland, Orange and Ulster counties; and parts of Broome, Chenango, Madison, Oneida, Otsego, Cortland and Dutchess counties.

New Jersey and Pennsylvania—An estimated 410,000 acres, including parts of Bergen, Passaic, Morris, Sussex and Warren counties in New Jersey, and parts of Wayne, Pike and Monroe counties in Pennsylvania.

About 5 million dollars have been

(Continued on page 8)

AAI Directors Hear Optimistic Reports On Ammonia Sales

MEMPHIS—The agricultural ammonia industry appears to be headed into one of its finest years of sales, members of the board of directors of the Agricultural Ammonia Institute were told at their annual spring meeting here.

Early reports on 1957 distribution indicated sales were running as high as 30% above the same period a year ago. Optimistic reports involved the sales of anhydrous ammonia for direct application to the soil in such states as Texas, California, Louisiana, Mississippi, Arkansas, Missouri, Illinois and Georgia.

In the 1955-56 fertilizer year use of anhydrous ammonia for direct application totaled 431,000 tons, an increase of 21.8% over the previous year.

Ammonia distributors are predicting directly-applied ammonia will account for an even greater percentage of the agricultural ammonia used in the 1956-57 fertilizer year. Approximately 1,500 bulk plant ammonia distributors are now in operation.

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National Plant Food Institute Plans Survey of Factors That Influence Buying

WASHINGTON—A national survey "to determine the factors which influence the farmer to buy fertilizers" soon will be undertaken by the National Plant Food Institute, as a preliminary step in expanding the fertilizer market.

The survey was authorized by the Institute's board of directors.

Information obtained in the survey more clearly will point the direction that should be followed to achieve an expansion of the fertilizer market," Dr. Russell Coleman, executive vice president of the Institute, said.

"The fertilizer industry has a pro-

ductive capacity of 25 to 50% more plant food than it is now selling. Yet agricultural leaders say that fertilizer usage should be at least twice the present consumption. The need for an accelerated promotional program, conducted in harmony with the recommendations of the land-grant colleges and other recognized agricultural agencies, is apparent."

Dr. Coleman said that "plans for a forward looking program to achieve greater fertilizer acceptance and usage now are in the preliminary stages," and added that "shortly, a detailed promotional program will be presented to Institute members for their consideration."

Industry Counsel Speaks Against S.11

**Says Bill Limits Right
To Meet Competition**

By JOHN CIPPERLY
Croplife Washington Correspondent
(See Editorial on Page 22)

WASHINGTON—John D. Conner, general counsel for the National Plant Food Institute, Washington, in testifying March 27 before the Antitrust and Monopoly Subcommittee of the Senate Committee on the Judiciary in opposition to the enactment of S. 11, said that "there are no practices presently used in the distribution of fertilizer which warrant the passage of the proposed legislation."

He said that there is no justification for this Congress to now de-

(Continued on page 21)

Accurate Placement of Seed, Fertilizer Key to Pasture Establishment, USDA Says

WASHINGTON—Placement of fertilizer and forage seeds in separate "bands" within the seedbed may prove to be the farmer's trump card in establishing a good pasture, say forage-crop specialists of the U.S. Department of Agriculture.

Results of experiments conducted since 1952 at the Agricultural Research Center, Beltsville, Md., indicate that the most effective method of forage-plant establishment was a combination of drilling fertilizer 1½ inches deep and seed ¼ inch deep.

Several advantages of this new concept were revealed in comparative tests between broadcast and band-seeded plots of spring-planted orchardgrass with *Sericea lespedeza*, and fall-planted tall fescue with Ladino clover, USDA said.

Increased yields of up to 130% at low seeding and fertilization rates

was the most spectacular selling point reported, but another recently discovered advantage may be of even more economic importance to the farmer. Latest experiments with *Sericea lespedeza* and orchardgrass in band-seeded and broadcast plots show that band seeding will give good stands, even when planting is done considerably earlier or later than is usually recommended. By comparison, broadcast plots seeded much earlier or later than usual had a very low survival rate and gave poor yields.

In fall planting of a mixture of tall fescue and Ladino clover, better establishment was noted in three out of four years as a result of drilling fertilizer below drilled seed. Establishment was measured

by emergence, development of seedlings and first-year yields.

In these plantings, poor moisture conditions in most cases reduced stands materially in broadcast treatments three out of the four years (1952-1955). However, excellent moisture conditions prevailed in the fall of 1955, and USDA agronomists noted little difference in emergence, although band-seeded plots still showed more vigorous seedling growth.

The researchers found that in no instance were fall stands of broadcast treatments superior to drilled treatments within the same groups of fertilizer and seed rates.

On spring-planted plots or orchardgrass with *Sericea lespedeza*, drilling fertilizer below seed has a depressing effect on establishment in two out of three years, except in the case of phosphate fertilizer alone.

Phosphoric acid and complete fertilizer stimulated early growth, but recent results seem to indicate that applications of nitrogen or potash, alone or in combination, are appar-

ently detrimental to germination of seeds and seedlings, USDA said.

USDA researchers point out that considerable work remains to be done on fertilizer ratio, fertilizer placement, degree of precision necessary and type of band-seeding machinery that gives best results. Further study is also required to determine the species and practices best adapted to soil and weather conditions of particular areas.

Research is underway to determine the advantages and disadvantages of seeding forage grass and legume plants between the rows of a companion crop, and the fertilizer placement that will give adequate yield of the companion crop with minimum competition to the forage seedlings.

Research is also being done in cooperation with state experiment stations on various aspects of band seeding and to determine ways of overcoming the crowding-out effect of established plants or areas being renovated.

Consolidated Chemical Industries Completes Sulfuric Acid Plant

MOBILE, ALA.—Consolidated Chemical Industries, a division of Stauffer Chemical Co., has completed a new sulfuric acid plant near Mobile at Le Moyne, Ala. The plant, of the contact type, has a capacity of 50 tons per day. Operations began March 1.

This latest addition to the family of Consolidated plants completes service facilities for the entire Gulf Southwest, adding the Mobile area to existing CCI acid plant locations at Houston, Baytown, Corpus Christi and Baton Rouge, company officials said.

The Le Moyne plant, located near main water, rail and highway outlets, will furnish sulfuric acid in quantities via tank car, tank truck and barge.

Growth of Corn Speeds Up as Soil Temperatures Increase

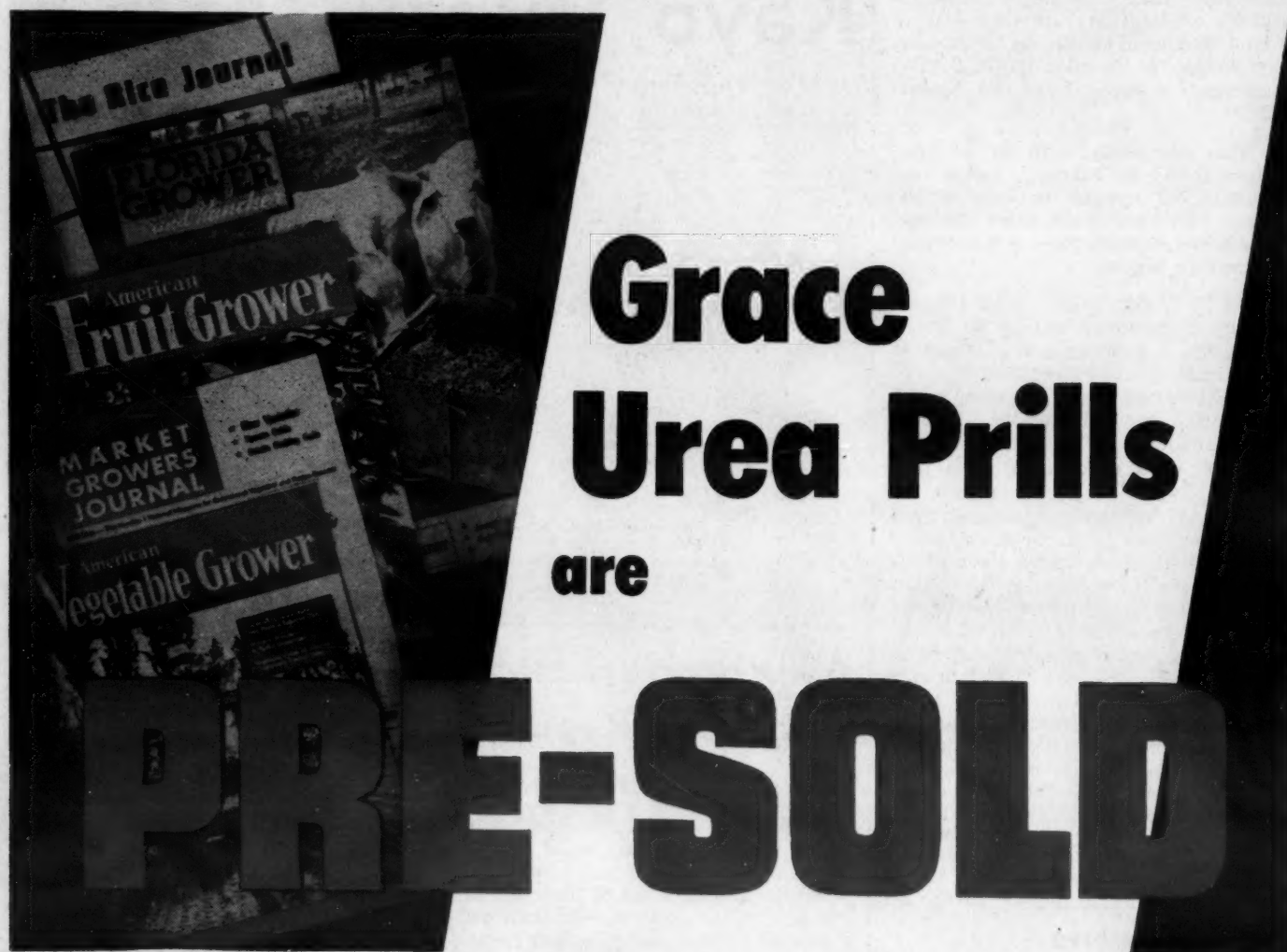
WASHINGTON — Increasing soil temperature increases the rate of corn emergence, rate of growth and earliness of maturity, according to recent studies by the U.S. Department of Agriculture in cooperation with the Iowa Agricultural Experiment Station.

In one of the few experiments of this type that have been made, scientists installed underground heating cables in a central Iowa cornfield. They could alter and control soil temperatures. The rate of corn growth increased in proportion to the increase in soil temperature until the temperature of about 75° Fahrenheit was reached. This temperature appeared to be the most favorable for growing corn. Included in the test were heated and unheated plots, both bare soil and mulched soil. Soil temperature measurements were made at a depth of 4 inches.

South Carolina Entomologists to Meet

CLEMSON, S. C.—The second annual meeting of the South Carolina Entomological Society will be held April 3-4 at the Francis Marion Hotel in Charleston. Registration will be from 12:30 to 2 p.m., April 3.

Dr. J. H. Cochran, head of the department of entomology and zoology at Clemson College reports that speakers will include Dr. E. F. Kilg, chief of the Entomology Research Branch, U.S. Department of Agriculture; M. H. Sartor, supervisor of the Atlantic Area of the Plant Quarantine Branch, USDA; Commander K. L. Knight, Bureau of Medicine and Surgery, Department of Navy; and E. J. Bussart, entomologist, Velsicol Chemical Corp.



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Small Spring Wheat, Corn Crops Seen in Plantings Intentions

WASHINGTON—Based on reports from farmers in all parts of the country on or about March 1, the following is an estimate by the U.S. Department of Agriculture Crop Reporting Board of the acreages likely to be planted to various crops this year.

For corn, the estimated 1957 plantings may total 74.4 million acres, the smallest in 70 years and 11% below average. Spring wheat may total 12.8 million acres, the smallest of record and a third smaller than average.

The oat acreage may reach 43½ million acres, a little less than last year and average. Sixteen million acres of barley may be planted, up 1% from last year and about a third above average. The soybean acreage may total 22.7 million, up 3½% from 1956 and the highest of record.

Prospects indicate 26½ million acres of sorghums for all purposes, up 23% from last year and three-fourths above average. Hay for harvest may total 72.8 million acres, down 1% from 1956 and 2% from average. One and one-third million acres of tobacco are in prospect, 17% under 1956 and about a third below average.

The total prospective potato acreage, at 1.4 million, is up less than 1% from 1956. The estimated 1957 rice acreage is estimated at 1.4 million acres, down 10% from last year and a fourth below average; 5.8 million acres of flaxseed are in prospect, about the same as last year and the fourth largest crop in 37 years.

The total peanut acreage is placed at 1,834,000, a little below last year but 32% below average. An estimated 1,466,000 acres of dry beans may be planted, slightly above 1956 acreage but 12% below average.

The acreage of dry peas may total 55,000 acres, down about 2% from 1956 but a little above average.

Sugar-beet growers say they will plant 912,000 acres for sugar, 10% more than last year and 7% above average.

Monsanto Promotes Two Researchers; Citations Awarded

ST. LOUIS—Promotion of two researchers to the position of scientist and the awarding of the 1956 Gaston du Bois citations to two other members of Monsanto Chemical Co.'s Inorganic Chemicals Division were announced here by E. G. Somogyi, director of the division's research department.

Elerington Saunders of Everett, Mass. and Dr. Edward J. Griffith of Dayton, Ohio were promoted to the position of scientist in the division's research department. They are the first in the Inorganic Chemicals Division to be named to this post.

The position of scientist was established within the company two years ago to recognize outstanding technical accomplishments and to give individuals maximum opportunity to plan and conduct purely scientific endeavors.

Dr. John H. Payne, Jr., of Dayton and Dr. Joseph A. Brink, Jr., of Everett were honored with the division's Gaston du Bois awards for outstanding research accomplishments during 1956. The late Gaston du Bois was a former Monsanto president.

Dr. Payne's award was for work in fertilizer formulations, particularly in pioneering the use of the IBM 702 Electronic Data Processing Machine for rapid calculations of granulated fertilizer formulations. Dr. Brink's award was for the completion of a fundamental engineering project through the development of a glass fiber filtration technique for aerosols.

Shell Sales of Chemical Products Set Record in 1956

NEW YORK—Sales of chemical products by Shell Chemical Corp. reached a new high in 1956, primarily because of record sales of agricultural chemicals, industrial chemicals, resins and plastics, and synthetic rubber, according to the annual report of Shell Oil Co.

"In the fertilizer field sales of nitrogen products were adversely affected by the intensive competition caused by overproduction of ammonia," the report stated.

It noted that production of urea began late in 1956 at Shell's new Ventura, Cal. facilities and that the firm undertook during the year the manufacture of diammonium phosphate at the Shell Point plant.

"Sales of agricultural chemicals continued to improve, notably our in-

secticides, dieldrin and endrin," according to the report. "The demand for dieldrin was considerably expanded through the World Health Programs of the U.S. government in cooperation with United Nations agencies and public health authorities in malaria-ridden countries. Sales of endrin benefited from increased usage on cotton, tobacco and certain vegetable and field crops.

"During the year phosdrin insecticide, a new organic phosphate chemical, was introduced in limited quantities under an experimental label.

"This chemical can be particularly useful to growers of vegetable, fruit and field crops by controlling insects just prior to harvest time without leaving a harmful residue on the crop. It is sold, as are our other insecticides, to formulators who prepare finished pesticides for sale under their own brand names. It is anticipated that required labels and residue tolerances will shortly be established

so as to permit commercial marketing of this new insecticide."

The report noted that expansion of the firm's technical service laboratory at Union, N.J. was started at midyear "to meet the growing product application needs of our customers and to provide space for product formulation research on agricultural chemicals."

ATTORNEY JOINS DIAMOND

CLEVELAND—Edward J. Masek, an attorney since 1952 in the Cleveland office of the anti-trust division of the U.S. Department of Justice, has joined Diamond Alkali Co. in a similar capacity, it was announced here by Donald S. Carmichael, secretary of the company. At his new post Mr. Masek will work with John A. Wilson, assistant secretary, and will devote his attention chiefly to general legal matters for the company.

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Du Pont to Expand Herbicide Output At Indiana Plant

WILMINGTON—A new production unit to manufacture sulfamic acid and "Ammate" weed and brush killers will be built by the Du Pont Co. on the site of its present plant at East Chicago, Ind.

The new unit will double the company's production of these two products, Clark W. Davis, general manager of the Grasselli Chemicals Department, said. "In addition, it will permit us to provide our customers in the Middle West, South, Southwest and Far West with better service, since our other manufacturing facility for these two products is on the East Coast."

Construction of the unit, which will be handled by the company's engineering department, has started, and

it is expected that operations will begin late in 1957. The peak construction force will total about 125 men. "Operation of the facility will result in a slight increase in employment at the East Chicago location where over 400 persons are now employed," Mr. Davis said.

Du Pont engineers are working closely with the Indiana Stream Pollution Control Board to insure that the new operations will not cause water pollution. Substantial expenditures are planned for pollution abatement equipment.

Sulfamic acid has a wide variety of uses in the chemical, soap, pharmaceutical, industrial cleaning and paper industries. It is used in the manufacture of synthetic detergents, synthetic sweeteners, and as an industrial cleaner.

Sulfamic acid is a basic ingredient in the production of "Ammate." "Ammate" weed and brush killers are developments of Du Pont research. They are used for control of weeds, brush and undesirable hardwoods along utility rights-of-way and in similar locations, and have been used for control of poison ivy in parks and recreation areas.

Beet Leafhopper Migration Expected

LOGAN, UTAH—A light migration of beet leafhopper into cultivated areas of south central and northern Utah and western Colorado is expected this spring.

Howard E. Dorst, entomologist of the Agricultural Research Service at Utah State University in Logan, said the estimate is based on a recent survey of breeding grounds in the Intermountain Area.

Movement of beet leafhoppers from southern breeding grounds usually occurs late in April and early in May and affects sugar beets planted in April.

Northern migration occurs in late May and early June and is expected to be larger than that recorded in 1956 but not reach outbreak proportions.

Experimental studies have shown that properly timed applications of DDT spray or dust give protection.

Noxious Weed Control Funds to Be Available

CHEYENNE, WYO.—The U.S. Department of Agriculture will again make available federal funds in 1957 for noxious weed control in Wyoming, according to William Chapman, state agriculture commissioner.

Mr. Chapman said farmers will also be authorized to carry out weed control measures on federal land where it is causing farm land to become infected. He noted that written agreement should be made with the government agency in charge of the land.

Farmers will be reimbursed by the government for expenses.

Mr. Chapman said he was "very much encouraged by the authorization, and I feel it will be a very valuable practice in parts of Wyoming where noxious weeds are a big problem to many farm operations."

The new weed control measures were discussed at a recent meeting of the State Agriculture Conservation Service and its technical committee in Casper.

OREGON WEED MEETINGS

PORTLAND, ORE.—A series of weed meetings is being held in western and southern Oregon this month under sponsorship of the State Highway Department, Oregon State College and the Department of Agriculture. Ray Kelso, herbicide control supervisor with the agriculture department, made the announcement of the fourth annual series. Sessions are designed particularly to instruct state, county and city road crews and irrigation ditch workers on use of weed killers, weed and brush control and the use of sterilants.

Byron M. Kern In New Production Post with Spencer

KANSAS CITY—Spencer Chemical Co. has announced the promotion of Byron M. Kern to the position of general manager of production, agricultural chemicals division. He was previously general manager of engineering and construction.

In his new position, Mr. Kern will direct the manufacturing activities of the company's agricultural chemical products including agricultural ammonia, Spensol ammoniating solutions, and "Mr. N" (ammonium nitrate), which are produced at the Jayhawk works near Pittsburg, Kansas, the Henderson, Ky., works, and the Vicksburg, Miss., works.

January Super Output Below Year Ago

WASHINGTON—U.S. production of superphosphate and other phosphatic fertilizers during January totaled 220,497 short tons (100% A.P.A.), compared with 253,904 short tons in January a year earlier, according to the Bureau of the Census.

Shipments last January amounted to 158,988 short tons, down from 160,432 short tons in January, 1956. Stocks on hand at the end of January totaled 415,459 short tons, compared with 418,373 short tons a year earlier.

January, 1957 production included 138,422 short tons of normal and enriched, 65,484 short tons of concentrated and 16,591 short tons of other phosphatic fertilizers.

Pea Aphid Appearing In California Fields

EL CENTRO, CAL.—The pea aphid is appearing in large numbers in Imperial Valley fields again, George D. Peterson, Jr., a county farm advisor here reports.

Mr. Peterson said the green aphid appears regularly each spring and occasionally does great damage. It feeds mainly on the stems and new leaf buds of alfalfa plants in contrast to the spotted alfalfa aphids which feed primarily on the underside of the leaves.

Unlike the spotted aphids, the pea aphids do not kill the alfalfa plants. They can, however, stunt the alfalfa and cause a loss in quality and tonnage.

Shell Building Methyl Parathion Unit at Denver

NEW YORK—Shell Chemical Corp. is building a new unit at its Denver plant to produce methyl parathion, a phosphorus based insecticide. The plant will be completed in early May. F. W. Hatch, manager of Shell's agricultural chemical sales division, said March 26 his company is adding methyl parathion to its line of insecticides primarily to help fight boll weevil infestations in southern cotton crops. He said that methyl parathion in combination with endrin has proved effective in combating cotton boll weevils that have become resistant to some of the controls previously used.

While methyl parathion is highly toxic to man and animals, Mr. Hatch said, it can be used safely and effectively if the company's safety precautions are followed.

Wisconsin Firm Puts \$300,000 Fertilizer Plant in Operation

STEVENS POINT, WIS.—The new \$300,000 fertilizer plant of Kickapoo Fertilizers went into operation here recently. The firm is an affiliate of Midwestern Phosphate Corp., which has general offices in Madison, Wis.

The plant will employ from 20 to 30 when in full production. Donald W. Aitken is president of Midwestern Phosphate, and R. B. Baldrige is plant manager of the installation here.

1958 Western Cotton Production Conference Set

MEMPHIS—The 1958 Western Cotton Production Conference will be held March 4-5 at Hotel Cortez in El Paso, Tex., according to the National Cotton Council.

The conference will be sponsored by the council and the Five State Cotton Growers Assn. Local hosts will be cotton producer organizations in the West Texas and New Mexico area. It will be the seventh annual conference devoted to problems of cotton production in the western states.

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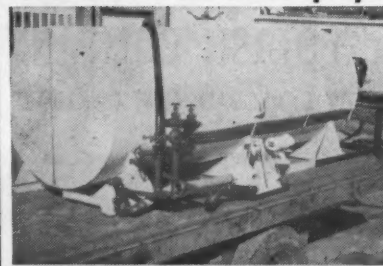


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1000 B T B 5-ton Truck Sprayer (Booms)

Same as above except unit has 8 row boom instead of single nozzle. Each, only **\$765.00**

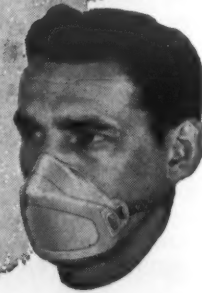
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Arizona	162.00	999.87	1,161.87
Arkansas	42,456.86	30.00	47.64	42,534.50
California	11,423.00	1.00	7,506.00	18,930.00
Colorado	747.80	....	10.00	757.80
Connecticut	3,046.83	....	440.31	3,487.14
Delaware	7,283.73	....	80.31	7,364.04
District of Columbia	383.96	....	94.17	478.13
Florida	80,176.21	32.00	29,472.70	109,680.91
Georgia	123,836.31	17.00	6,374.89	130,228.20
Idaho	518.00	....	13.00	531.00
Illinois	198,034.24	....	1,076.17	199,110.41
Indiana	148,011.85	....	3,518.19	151,530.04
Iowa	41,613.38	....	153.00	41,766.38
Kansas	2,694.25	313.95	....	3,008.20
Kentucky	26,240.95	....	12,518.41	38,759.36
Louisiana	24,526.72	1.17	89.35	24,617.24
Maine	10,610.44	....	922.54	11,532.98
Maryland	71,088.62	13.49	4,485.64	75,587.75
Massachusetts	15,656.71	....	1,138.98	16,795.69
Michigan	47,655.91	....	478.32	48,134.23
Minnesota	56,366.76	....	98.90	56,465.66
Mississippi	34,047.01	....	282.99	34,330.00
Missouri	43,259.58	479.58	413.29	44,152.45
Montana	91.00	....	1.00	92.00
Nebraska	1,398.00	....	3.30	1,401.30
New Hampshire	12.11	....	....	12.11
New Jersey	31,642.07	12.00	1,179.49	32,833.56
New Mexico	120.61	....	....	120.61
New York	32,840.13	....	1,289.24	34,129.37
North Carolina	76,058.45	88.66	18,115.28	94,262.39
North Dakota	4,105.80	....	....	4,105.80
Ohio	159,864.91	64.26	3,918.42	163,847.59
Oklahoma	2,451.45	....	....	2,451.45
Oregon	3,707.64	....	233.21	3,940.85
Pennsylvania	35,550.48	23.62	1,861.16	37,435.26
Rhode Island	2,275.56	....	32.03	2,307.59
South Carolina	60,482.60	62.86	4,866.59	65,412.05
South Dakota	528.05	....	....	528.05
Tennessee	74,053.35	....	6,495.25	80,548.60
Texas	48,983.25	....	358.72	49,341.97
Utah	162.00	....	....	162.00
Vermont	1,322.96	....	....	1,322.96
Virginia	89,194.53	45.00	16,519.04	105,758.57
Washington	5,963.38	1,214.96	482.12	7,660.46
West Virginia	1,011.23	....	....	1,011.23
Wisconsin	53,157.93	54.47	1,190.91	54,403.31
Wyoming	1.00	....	....	1.00
Total United States ..	1,742,977.21	2,466.02	127,260.90	1,872,704.13
(Imports)	*138,552.17	*....	*27,078.05	*165,630.22
Total United States	1,742,977.21	2,466.02	127,260.90	1,872,704.13
(Imports)	*138,552.17	*....	*27,078.05	*165,630.22
Canada	81,094.81	....	8,185.62	89,280.43
(Imports)	*31,658.00	....	*2,873.00	*34,531.00
Cuba	10,165.89	....	4,480.67	14,646.56
(Imports) .....	*....	....	*1,550.00	*1,550.00
Hawaii	21,457.25	....	1,901.00	23,358.25
Puerto Rico	17,654.86	....	2,537.45	20,192.31
(Imports)	*1,862.19	....	*1,260.45	*3,122.64
Tot. Institute Territories	1,873,350.02	2,466.02	144,365.64	2,020,181.68
Other Exports	142,351.23	....	20,519.32	162,870.55
Total Agricultural	2,015,701.25	2,466.02	164,884.96	2,183,052.23
(Imports)	*172,072.36	....	*32,761.50	*204,833.86

POTASH DELIVERIES

(Continued from page 1)

ons K₂O. The total chemical deliveries of 124,909 tons K₂O were over 1% of all potash deliveries, and 10,94 tons or 9% more than in 1955.

In the fourth quarter of 1956, deliveries totaled 1,150,934 tons of salts containing an equivalent of 665,324 tons K₂O, an increase of nearly 11% compared to K₂O deliveries during the same period in 1955. The continental U.S. received for agricultural purposes 524,274 tons K₂O, Canada 44,23 tons, Cuba 4,115 tons, Puerto Rico 4,812 tons, and Hawaii 3,926 tons. Exports to other countries were 5,320 tons K₂O.

Chemical deliveries during the fourth quarter were 46,357 tons of salts with an equivalent of 28,854 tons K₂O, a decrease of more than 2% under the same period in 1955. Of the 1956 total, muriate of potash was equivalent to 27,441 tons K₂O and sulphate of potash containing 1,156 tons K₂O were delivered in the United States and 183 tons K₂O as muriate and 40 tons as sulphate of potash in Canada. Exports were 35 tons K₂O. In addition to the regularly re-

ported deliveries on the quarterly basis, information from governmental and other sources indicates that during the second half of 1956 there were additional imports of European potash into the United States, Canada, Cuba and Puerto Rico of 98,753 tons K₂O as muriate of potash and 23,950 tons K₂O as sulphate of potash. These figures are included in the deliveries for the fourth quarter.

PURDUE PUBLICATION

LAFAYETTE, IND.—More than 20 herbicides that appear to be helpful to Indiana farmers in solving their weed control problems are listed in a 1957 Purdue University publication entitled, "Recommended Chemicals for Weed Control." The publication describes in outline form the herbicides and method of treatment of the weeds. It was prepared by O. C. Lee, Purdue extension botanist, and G. F. Warren, Purdue horticulturist.

Michigan Prepares To Continue Dutch Elm Control Campaign

LANSING, MICH.—Michigan state and local units are renewing the fight again in the cooperative campaign to spray against the Dutch elm disease.

A marked decrease in new cases has resulted since the state program began in 1950. In that year, the first case of Dutch elm disease was spotted in Wayne County.

Last year, towns across the lower peninsula as far north as the Saginaw Bay area were participating in the program to save the trees which make up 72% of Michigan's shade trees.

"Michigan has the best program in the nation for fighting the Dutch elm disease," said C. A. Boyer, chief of the plant industry division of the Michigan Department of Agriculture.

With local units shouldering the major costs of the operation, the

program attempts to see that all elms in afflicted areas are sprayed and that diseased trees as well as loose pieces of bark or wood are cleaned up and burned. Spraying is directed at the European bark beetle, which is responsible for the spread of the incurable blight.

Michigan towns and cities spent an estimated \$3 million on the project last year and lost the "inestimable" esthetic value of these trees which take 50-100 years to grow.

The department paid out \$100,000 last year, and has asked the legislature for added funds this year to hire 10 more season workers.

CORK DISEASE

Cork disease of the sweet potato, until recently prevalent only in southeastern states, is now found in all sections of Missouri and is serious in some areas, says Victor N. Lambeth of the University of Missouri, horticulture department.



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BANK FARM EXPERT REPORTS . . .

Farmers Turn to Chemicals As Cash Becomes Substitute For Labor and More Acres

By EARL COKE*

Vice President, Bank of America
San Francisco, Cal.

It is not my intention to give you a treatise on money—to discuss from whence it cometh or whither it goeth. In this age of speed and jets, velocity—including that of money—is of great importance. Indeed were it not for the added velocity of money in recent months the so-called "tight money" situation would be far more

pronounced. Actually, as you are well aware, the tightness of money is not due to any diminution in supply but rather to demands being in excess of supply.

The extreme pressures of a rapidly expanding economy are straining the facilities available to finance expansions and at the same time care for the work-a-day needs. Added to this demand are the brakes which have been applied to our economy through the monetary policy of the Federal Reserve System. We see the results of this attempted slow-down in the uneven and irregular brake on our eco-

nomy. The pressures of rising wage rates and strain created by increased government spending, along with expanding industrial plants, all have built up a demand for money of a magnitude never before experienced in our country except in war periods.

The progress which agriculture has made in this country is perhaps best described as a "technological revolution," for farm output has surpassed the wildest dreams of the past. Total farm output in 1955, for instance, was 60% above output in 1920.

This was accomplished with 20 million fewer harvested acres and 11.4 billion fewer man hours of farm labor. Productivity per acre increased about 37% on a national average, while the increase was 117% for the Pacific states. During this same period, productivity per man hour in the United States increased 175%. The number of persons supported by the production of one farm worker was

about 4.3 one hundred years ago, and was 8.3 in 1920.

Today one farm worker supports in excess of 20 persons off the farm. All this indicates real progress, indeed, and the end is not in sight. In fact, the rate of increase seems to be accelerating in some areas and with some products.

When one examines closely the changes which have occurred in the physical input requirements of agriculture over the years, one sees that this tremendous decrease in land and labor per unit of output has been partly offset by an increase in capital. As the farmer sees it, money has been substituted for labor and land in the production process.

The biggest factor contributing to this change, of course, has been the mechanization of our farms—the industrial revolution of American agriculture. The number of farm tractors increased from 240,000 in 1920 to 4.5 million in 1955 and motor truck numbers have shown comparable increases. As a consequence, millions of acres of land and man hours have been diverted from the care and maintenance of horses and mules to power to the production of food and fiber for human consumption. The development of milking machines and crop harvesters of various kinds has further released human labor and made farm work less onerous.

Another very important factor counting for the enviable record progress agriculture has made is the use of fertilizers and chemical sprays. Here again, technically, farmers are substituting money for land and labor. There was more than 6 times as much fertilizer applied in 1955 in 1920. The use of these plant nutrients has increased 65% since 1920. According to the latest census figures, farmers spent \$1.1 billion for commercial fertilizers in 1954.

Farmers' expenditures for insecticides, fungicides, herbicides, etc., have increased 20 times since 1920. The estimated \$400 million spent last year to purchase these chemicals dramatically points up the money required to obtain efficient crop and livestock production.

Needless to say, then, the capital requirements of agriculture have increased rapidly in recent years. The average value of land and buildings per farm in the United States has increased almost 4 times since 1940, including the value of machinery or annual cash cost for fuel, fertilizers, sprays, etc. Today the capital investment per worker is higher for agriculture than for any other important segment of our economy and the farmer's need for money to meet operating expenses is higher than has ever been before.

In spite of the increased demand for money throughout the economy, credit requirements for normal business and even some expansion in most segments of our economy are being met; especially is this true in agriculture. Here I am defining agriculture to include not only the farmers producing agricultural commodities but those in allied industries supplying the production goods such as chemicals and machinery, and processors, distributors and handlers of agricultural commodities.

Since it is estimated that the industries and services included in our definition of agriculture count for 40% of our country's gross national product, and the employment of 40% of our labor for the adequacy of the financing of these economic units is of great importance to our nation. It is of special importance to the agricultural chemical industry represented by you here today.

The basic question that needs to be answered, I assume, is whether agricultural credit, by its shortage or over-abundance, or by the form in which it is available, has contributed to the relatively unfavorable position



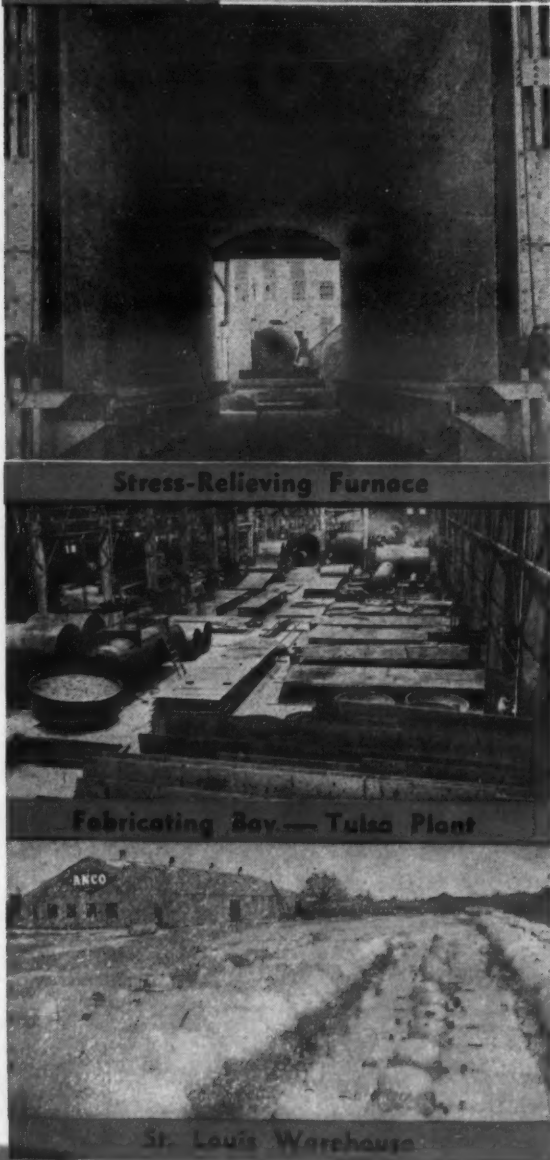
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which the producer of agricultural products finds himself today.

Admittedly, any attempt to answer this question must rely heavily on value judgments as to what constitutes agriculture's main problem, as well as on quantitative judgment to the extent these problems are influenced by credit. In my opinion, agriculture's unfavorable position is caused, principally, because it has too many resources—particularly human resources—engaged in producing too much of the wrong kind of commodities.

According to a recent study conducted by the Federal Reserve System, "Farm debt has been growing the last several years while farm incomes were declining. In mid-1956 farm debt (exclusive of Commodity Credit Corp. price advances) totaled \$18.5 billion, about 6% higher than a year ago and larger in dollar amount than at any other time. With continued growth in size of farms (up 12% since 1950) and mechanization, the average farm investment in land and other assets is now about 75% greater than it was in 1947. Reflecting these factors, and smaller farm incomes, farmers have depended upon credit to an increasing extent."

Borrowed funds and credit are supplied from many sources—both private and public—banks, insurance companies, individual lenders, dealers in machinery and farm supplies, processors, feed dealers, agencies of the Farm Credit Administration, Farmers Home Administration, Commodity Credit Corp., Agricultural Conservation Payments, Federal Crop Insurance, Rural Electrification Administration. Whatever the source, the supply of money has a profound effect on the farmer's ability to expand, to acquire production goods, and to market or store commodities.

When we consider total farm debt as a percent of total assets, farmers are still in a strong financial position, although they have been losing ground a little in this respect the last 5 years. Currently farm debt outstanding is about 11% of the value of total farm assets and about 5% of present liquid or financial assets. In 1940 comparable figures were 18.5% and 200%, while in 1950 they were 9% and 70% respectively. To get a clearer picture of the farm credit situation, we should separate real estate mortgage debt from non-real estate debt, and then examine the sources of credit in each category.

Farm real estate mortgage debt of the U.S. now totals \$8,962 million, which is an increase of \$786 million over 1955 and \$3,383 million over 1950. This outstanding real estate indebtedness as of Jan. 1, 1956 was held by:

Federal Land Banks	17%
Life insurance companies	25%
Commercial banks	15%
Individuals and others . . .	40%
Farmers Home Administration	3%

For Western United States, the percentage of mortgage debt held by individuals was markedly in excess of the U.S. average, reaching 62% for the three Pacific Coast states. Our knowledge concerning this credit category is limited. We do not know the terms of the loans, for instance, nor do we know their rates. Likewise we are not certain who is holding this paper, although this large volume of real estate mortgages in the hands of individuals undoubtedly represents the willingness of farmers and others to accept this type of paper as an investment in order to avoid heavy income tax or to consummate a sale that could not be financed by regular lending agencies due to legal or policy limitations.

The preponderance of the total farm mortgage debt represents the purchase and improvement of land.

Supposedly, if the supply of farm mortgage credit were inadequate, the growth in agriculture's capacity to produce would not keep pace with the growing demand for agricultural products. From a review of studies made by the U.S. Department of Agriculture and by the land-grant colleges, as well as from the President's Materials Policy Commission study, one can only conclude that the long-run needs for agricultural products (as seen at the time of these studies) could easily be met by foreseeable expansions in our agricultural plant. In fact, most analysts conclude that surplus agricultural capacity will be with us for some time.

Conceivably this situation could change rather quickly if we continue attempting to underwrite our expanding role in world leadership. Some excess capacity in our agricultural plant may be a very desirable and economical form of insurance when faced with high un-

certainty about our needs. However, there is little evidence supporting any claim that limited credit is preventing a desirable expansion in our agricultural plant.

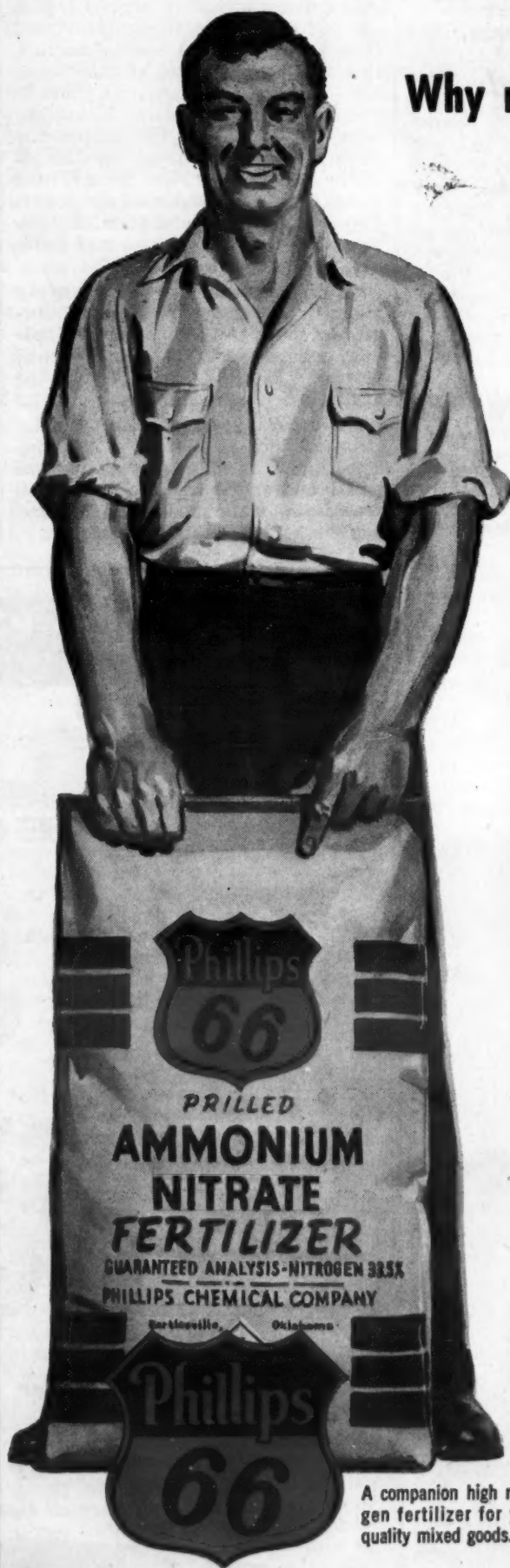
Another indication of the adequacy of farm mortgage credit is the trend in agricultural land prices which have increased about 64% as an average for the U.S. over the past 10 years. Even during the period 1952-1955, when farm incomes were falling every year, land values continued to rise. Today, agricultural land values as indicated by sales are in most areas greatly in excess of values justified by incomes derived from these lands.

Part of this pressure on increased land values comes from existing farmers who feel compelled to expand their operations in order to obtain increased efficiency made possible by technological advancements. Furthermore, there is the pressure from "suburbia" as some farmers "seed their land to subdivisions."

Not only do these farmers receive fancy prices for this land but they, in turn, move further out on the periphery to reinvest these funds. The fact that their capital gains tax is waived if they reinvest in agriculture within a specified time period induces additional pressures on land values.

Then, too, there has been a rather heavy flow of capital from successful lawyers, doctors and businessmen into agriculture in the last 10 years. As one businessman said recently, "Not only does my ranch provide me a pleasant place for an occasional trip to the country and provide an income tax deduction, it also makes me a little money." All of these forces combine to create a capital burden on some agricultural lands that farmers find as heavy to bear as Sinbad found the old man of the Sea.

With such high land prices relative to capitalized returns, institutions (Continued on page 19)



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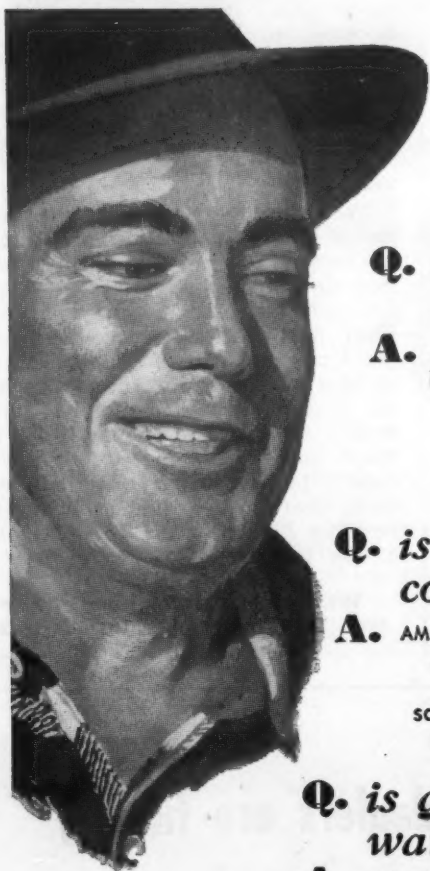
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PASADENA, CALIF.—330 Security Bldg.

RALEIGH, N. C.—804 St. Mary's St.
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GYPSY MOTH

(Continued from page 1)

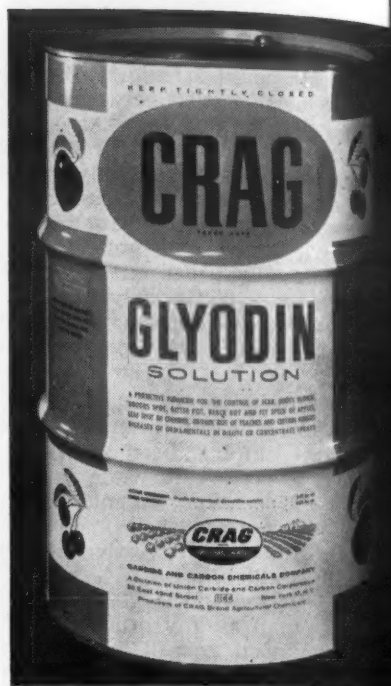
appropriated by state and federal governments for gypsy-moth control and eradication programs in the nine northeastern states during the current season. More than half this amount will be used in the federal-state spray program along the southern and western periphery of the area generally infested with gypsy moth. In addition, state control operations will continue in other infested portions of the nine states.

The combined program calls for eventual complete eradication of the gypsy moth. Since a single DDT treatment is expected to be adequate for a given area, next year's main spraying will be done in an area north and east of this year's operations. However, a few spots in the area sprayed this year may require re-treatment in 1958.

Products that might carry the gypsy moth cannot be moved into a sprayed area unless they are certified free of infestation. A federal quarantine to prevent spread of this insect has been in effect for many years in Connecticut, Rhode Island, Massachusetts, most of New Hampshire and Vermont, and in many counties of Maine and eastern New York. These states have long conducted spray programs to prevent defoliation of valuable trees and for control and gradual suppression of the pest.

Caterpillars (larvae) of the gypsy moth, by devouring the leaves of forest and shade trees, cause several million dollars worth of damage each year in a 38-million-acre area in the northeastern states.

By defoliating trees, these pests destroy millions of board feet of valuable timber and do great damage to forest and shade trees in recreation areas, on watersheds and around homes.



AWARD WINNER—A new Carbide and Carbon Chemicals Co. drum has received a high award in the third annual American Package Design Competition. Carbide and Carbon Chemicals Co. is a division of Union Carbide and Carbon Corp. The company's award-winning drum is a container for Crag Glyodin, a fruit fungicide. The drum won a certificate of merit, which ranked it second, along with a Tung-Sol electron tube package, behind the first prize winner, a series of Jones and Laughlin Steel Corp. packages. The Crag drum was designed by Robert G. Neubauer, Bridgeport, Conn.

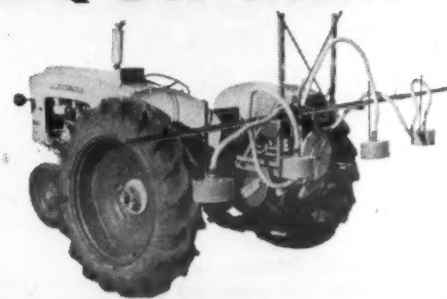
Iowa Tonnage

DES MOINES — Iowa fertilizer sales totaled 400,475 tons in 1956, according to the Iowa Department of Agriculture. This included 280,429 tons of mixed goods and 120,046 tons of materials.

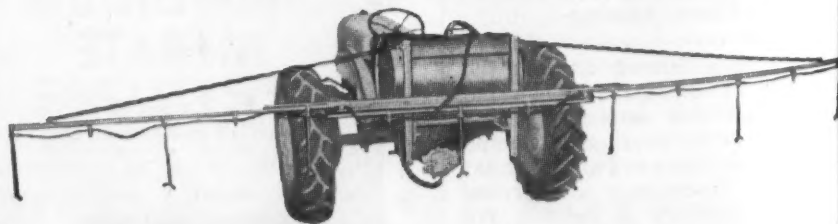
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ALLIED LINES—A frozen dog food package is being shown by Pat Slugg to a customer in the store of W. G. Slugg Seed & Fertilizer Co., Inc., North Milwaukee, Wis., which carries a full line of farm chemicals. Located in a suburban community, the store handles lines allied to fertilizer and other farm chemicals, such as garden and lawn supplies and seeds and found them to be important year around sales builders. In recent years a pet food department has built up a worthwhile income.

North Milwaukee, Wis., Store Finds Shift to Farm Chemicals Logical and Profitable Step

By AL P. NELSON

When an expanding metropolitan area reaches out year after year, claiming more and more farm land, until it virtually encircles a farm store, what can the management do, especially since its number of farm customers dwindles?

This is the problem which faced the W. G. Slugg Seed & Fertilizer Co., Inc., North Milwaukee, Wis., which was founded in 1927 and which had grown rapidly, principally selling feeds and buying and selling grain. But this enterprising merchant and his sons, Pat and Hugh, did not lose up shop as they saw the expanding city take more and more of their feed customers.

They met the situation by converting their operation to a fertilizer, farm chemical, seed and garden supply company. And whereas feed had once been the main line in stock, it now became a sideline, for some farmers still come here and buy feed. The conversion was a logical step, because Mr. Slugg and his sons had long observed that during the spring they had a strong demand for fertilizer and farm chemicals, but the season did not last long enough.

When they decided to convert their business, the main problem was to extend the fertilizer and garden supply season another three to four months. Beginning in 1945, this was one year by year. Today, the Slugg firm has a fine retail store which does a 12-month business, and in addition, there is also a wholesale department in farm chemicals which serves several hundred dealers in Wisconsin and part of Iowa. The annual volume on the retail store totals over \$100,000, while both retail and wholesale volume runs annually over \$400,000.

The mixer still stands in the feed department, but it is no longer used. The rest of the mixing room and feed warehouse are used for stocking fertilizer, feeds, chemicals, etc. In ad-

dition, a filling station adjacent to the store has been converted into a garden supplies store. The former grease department doors are big and permit traffic to flow in and out of the former service station. The drive-in lot outside the station is used by the Sluggs for displays of garden and other supplies.

It would be difficult to find two more enthusiastic garden supplies devotees than Pat and Hugh Slugg. They take turns visiting and selling their dealers, and each takes his turn working in the retail store. They know what their own store merchandising problems are, and they know what problems other dealers face. Often they can help other dealers build their businesses.

Pat and Hugh Slugg have some very definite merchandising beliefs, as follows:

1. **Stock required.** They believe that the average merchant can enter the garden supply field with a well chosen stock of \$2,500, provided he has the right sources of supply. A stock as small as this is almost unparalleled in many other types of retail stores, but the Sluggs say it can be done in the farm supply field, and they have seen their customers doing it in various localities where they have dealers. The turnover rate on a well chosen stock can be high for a dealer, and then he can expand his store and stock as his business grows.

2. **Nursery department.** On a \$2,000 investment in nursery stock, including evergreens, trees, vegetable and flower plants in flats and pots, a farm supply dealer can do up to \$10,000 annual volume in this department alone. The dealer can build plank sided frames for shrubs and trees, fill with good dirt and keep the plants watered. Thus the plants are protected and the selling season extended.

The Sluggs have such a department and they display it outdoors at one

(Continued on page 15)



SHOP TALK

OVER THE COUNTER

By Emmet J. Hoffman
Croplife Marketing Editor

Farm visits and farm selling are a year around job. That's the advice of the Fertility Builder, a publication of the Soil Fertility and Plant Nutrition Council of Missouri.

Farm selling requires planning and quite a bit of work. The odds are, however, that such work will pay good dividends. Farm visits are important sales promotion and selling tools.

One dealer offers these pointers on making farm visits. "Visit with 'em but don't waste their time. Help 'em out and give sound advice."

Visiting a farmer on his farm presents a first rate situation for discussing his fertility practices and needs. In such a setting, the farmer is more often reminded of his fertilizer and lime problems. The dealer is in a better position to "figure out" the farmer needs.

A visit, too, is concrete evidence of the dealer's interest in the farmers' operations. A mid-summer stop to ask "What kind of response are you getting from that fertilizer?" will impress the farmer. It will demonstrate the dealer's sincere interest in his crop production problems.

Large-Scale Demonstration

Rufus Young of Big Foot, Ill., is a fertilizer dealer who believes field demonstrations convince "doubting Thomases" of the results of fertilization.

Mr. Young has one of the largest corn fertilizing demonstration plots in the Corn Belt and last year tried out his corn growing ideas on 230 acres of land. Here are his experiences as related by a Middle West Soil Improvement Committee report:

This project, on the Wisconsin-Illinois line, not only paid a sizable profit on the investment, but it demonstrated to Mr. Young's neighbors and customers the big income potential in fertilizer.

In a single season, with a high fertility program, he averaged 85 bu. of corn on 230 acres previously known as "25-bushel corn land."

In the spring of 1956, Rufus found that his projected business for 1956 was only about half of what it had been in 1955.

Farmers were questioning that corn could be grown profitably even with high fertilization. Farmers with fields that were producing 25 bu.—plus or minus a few bushels—did not believe that yields could be boosted into the really profitable range all in one year.

Mr. Young himself began to wonder if yields could really be boosted in one year by providing all that was needed. So, he figured he might just as well really find out what could be done with this 25-bu. land.

He scouted around until he had rented 230 acres. Average rental was about \$10 per acre. That was the kind of land the owners thought they had. It was Carrington Clyde soil; basically good land if it was treated right with good management.

Mr. Young had the soil tested. On part of the land he put on a ton of lime to the acre—finely ground limestone, because the pH was down 5.0 to 5.5.

He plowed down either 250 lb. of 6-24-24, or 300 lb. of 0-20-20 on all the land. He used 200 lb. of 6-24-12

(Continued on page 12)



By RAYMOND ROSSON

County Agent, Washington County, Tenn.

We can't separate the R.F.D. routes from Main Street. They belong . . . together.

What difference would it make if the top soil in your trade area, was one inch deep, or six to 12 in. deep, or if it was sweet or sour, level, rolling or steep, containing a lot of humus or with no humus, if the farmers cropped most of the open land, or most of it was in good pasture and alfalfa?

What difference would it make if all the young farmers came to town and left only the very old people on the land, or if farmers in your area used scrub sires and scrub cows instead of artificial insemination and cows with a high production record, or if the cattle were fed timothy and red-top hay instead of alfalfa?

Business is tied right in with the soil and its management.

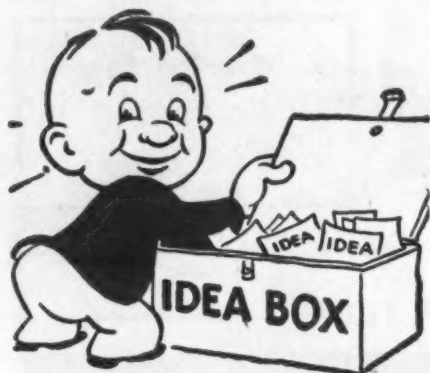
What difference would it make if there were no rural electric lines, or if farmers didn't have modern machinery and adequate buildings, along with good homes well furnished, or if we didn't have modern country schools with well qualified teachers and churches with well trained pastors who know how to live with the farmers in the furrow?

What difference would it make if the country did not have 4-H Clubs, PTA organizations, home demonstration clubs, community clubs, experiment stations and extension service?

All these things, with industry, make business what it is. We can't separate Main St. from the R.F.D. routes. They belong together.

ILLINOIS FIELD DAYS

URBANA, ILL.—The University of Illinois has scheduled field meetings at the Brownstown Soil Experiment Station May 9, Enfield Soil Experiment Station May 27, Ewing Soil Experiment Station May 28 and the Toledo Experiment Station May 29.



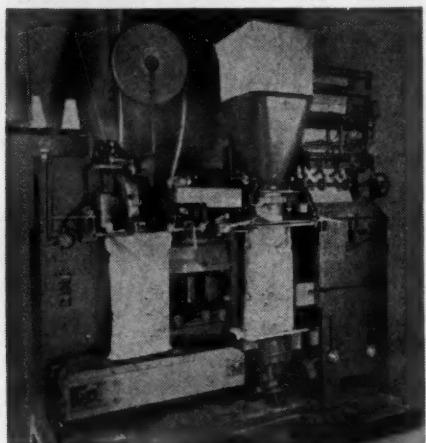
What's New...

In Products, Services, Literature

You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

No. 5673—Automatic Packaging

The St. Regis Paper Co. announces that "fully automatic packaging has now been extended to the filling of open mouth multiwall bags with the development of its St. Regis VredOMatic packer which makes it



possible to fill open mouth multiwalls and sew them closed with or without boundover tape automatically. The VredOMatic packer is used in combination with a St. Regis pre-weighing scale." The packer positions, opens, fills, closes and sews, with or without tape, open mouth multiwall bags holding 25 to 125 lb. of granular,

free-flowing materials such as feeds, sugar, ammonium nitrate, polyethylene pellets and similar products. It can also handle semi-free-flowing materials with auxiliary equipment, depending upon the characteristics of the materials. The company claims that "open mouth bags can be filled and closed automatically. The system provides accurate weights at a speed which matches or exceeds the production of most scales used in conjunction with open mouth packers. Bag closures are tight and accurate since the system provides for proper control of the gussets and the bag top at all times during filling and sewing." It is said that one man can handle three or more machines. From 6-12 bags per minute per packer can be handled, it is claimed. Secure complete details by checking No. 5673 on the coupon and mailing it to this publication.

No. 5675—Vibrator

A new leatherette-bound 36-page catalog on "Peterson Vibrolators" for industrial applications is available on request, according to officials of the Martin Engineering Co. The catalog describes in detail, pictorially and editorially, the action of the all-directional, high-speed vibrator used for the movement of granular matter. Each of the models is shown in photograph with description of char-

acteristics and applications. Specifications and performance data are listed. A variety of suggested mountings is illustrated. The catalog will be sent if you will check No. 5675 on the coupon, clip and mail it to this publication.

No. 6555—Soil Insect Control

An expanded promotional campaign in the Midwest in behalf of Heptachlor for soil insect control was announced by the Velsicol Chemical Corp. Increased farm paper advertising, more dealer promotional material, new literature, and direct mail will be used this year to promote the use of Heptachlor and Heptachlor-Fertilizer Mixtures for control of corn rootworms, wireworms and other soil insects that damage corn, sorghum, small grain, and legume crops. Program materials are now ready for the trade and complete information is available. Check No. 6555 on the coupon and mail it to Croplife.

No. 6556—Gibberellic Acid Formulation

Brellin is the trade name for a new water-soluble powder formulation containing the plant growth stimulant gibberellic acid introduced by S. B. Penick & Co. The Penick announcement states: "Since gibberellic acid is applied at low concentrations, it was vital that a simple and practical method of preparing solutions be developed. When dissolved in one pint of water, one level teaspoon (2.5 grams) of Brellin will make a solution containing 10 parts per million of gibberellic acid. In general, the best response has resulted from this rate of application, but those desiring to experiment at other levels can do so simply by increasing or decreasing the amount of powder or water used. Preliminary studies indicate that gibberellic acid increases the growth of dwarf azalea, chrysanthemum, juniper, maple, oak, Virginia pine, poinsettia, white spruce, African violet, and other plants and shrubs." Check No. 6556 on the coupon and mail it to secure complete details.

Also Available

The following items have appeared in the What's New section of recent issues of Croplife. They are reprinted to help keep retail dealers on the regional circulation plan informed of new industry products, literature and services.

No. 6553—Aluminum Diaphragm Assembly

A new aluminum diaphragm assembly designed particularly for use with nitrogen solutions and any other pressure medium not injurious to aluminum, has been developed by the Jas.



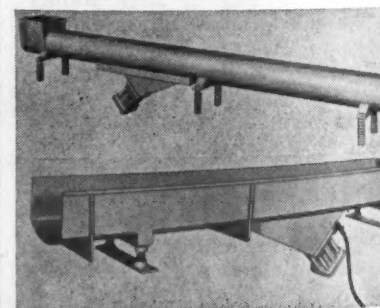
P. Marsh Corp. The unit is designed for field assembly and may be used with any reliable fluid-filled pressure gauge. It is suitable for application using up to 200 lb. pressure. The entire housing is of aluminum, the diaphragm is of Buna-N, a flexible, rubber-like material that is said to retain its original resilience even under heavy usage. A plastic tube of filling fluid and detailed instructions for field assembly are furnished with every unit. Secure complete details by checking No. 6553 on the coupon and mailing it to Croplife.

No. 5657—Seed Germinator

The addition of the new Minnesota style germinator has been announced by the Seedburo Equipment Co. The germinator is a water cooled unit designed for organizations which need to maintain uniform temperature and accuracy, the company announcement states. The water is circulated through copper tubing built within the walls of the germinator, thus preventing leakage. Further information and prices on the firm's line of germinators may be obtained by checking No. 5657 on the coupon and mailing it to this publication.

No. 5661—Vibrating Feeder

The Cleveland Vibrator Co. has introduced a new vibrating feeder in which the vibrating force is generated by a pneumatic drive mechanism. The feeder is completely metallic, and is claimed to resist high temperature damage and corrosion. Literature shows one moving part in the drive mechanism; no cams, bearings, belts or gears. The enclosure construction is designed to seal out



dirt and keep the drive free from destructive foreign matter. A wide variety of bulk material can be handled, the company states, and uphill feeding of some materials at 20° is possible. Rates of feed are adjustable. The feeders are available in pan, trough or tubular construction, with a selection of lengths and rates of feed. Check No. 5661 on the coupon and mail it to secure full information.

No. 6549—Liquid Fungicide

The Chemical Insecticide Corp. has developed a new sticking agent, U-101, which it is adding to the liquid fungicide it markets under the Chem-Bam name. The agent is said to make the fungicide adhere more strongly to vines and plants. The company announcement states: "U-101 virtually gives crops an impregnable coating of fungicide that can't be washed

Send me information on the items marked:

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| <input type="checkbox"/> No. 5652—Tail Gate | <input type="checkbox"/> No. 6547—Booklet |
| <input type="checkbox"/> No. 5657—Germinator | <input type="checkbox"/> No. 6548—Crusher |
| <input type="checkbox"/> No. 5660—Display Fixtures | <input type="checkbox"/> No. 6549—Fungicide |
| <input type="checkbox"/> No. 5661—Vibrating Feeder | <input type="checkbox"/> No. 6550—Chemicals Booklet |
| <input type="checkbox"/> No. 5673—Automatic Packer | <input type="checkbox"/> No. 6552—Heptachlor |
| <input type="checkbox"/> No. 5675—Vibrator | <input type="checkbox"/> No. 6553—Diaphragm |
| <input type="checkbox"/> No. 6543—Fertilizer Spreader | <input type="checkbox"/> No. 6555—Soil Insect |
| <input type="checkbox"/> No. 6545—Applicator | <input type="checkbox"/> No. 6556—Gibberellic Acid |
| <input type="checkbox"/> No. 6546—Folder | |

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by rain or watering. This, of course, gives crops greater protection against early and late blight, anthracnose, downy mildew, cercospora, blue mold, gray mold, bunch rot, and leaf rot than was possible heretofore." The fungicide has been used with great effectiveness on sweet corn, soybeans, beans, escarole, lettuce, potatoes, cabbage, cucumbers, peppers and tomatoes. For free literature check No. 6543 on the coupon and mail it to Croplife.

No. 6543—Fertilizer Spreader

A 20-ft. wide, spreader-seeder that is less than 8 ft. in width for highway travel has been announced by the E. S. Gandrud Co. The unit is also claimed to minimize the soil compaction problem in wet fields. The unit holds more than one ton of fertilizer at one time using either bulk or bag fertilizer. Two hoppers make it possible to use the spreader for application of mixed fertilizer or

erate within its present license fee. The tail gate is delivered completely assembled and ready for installation. Secure complete details by checking No. 5652 on the coupon and mailing it to this publication.

No. 6545—Liquid Fertilizer Applicator

New literature has been prepared by the M. & F. Manufacturing Co. on its product called by the trade name, M&F Distributor, a unit for applying liquid fertilizers, solutions, weed killers and other liquids by the gravity method. The unit is furnished with a 1-in. inlet valve so that the entire job of assembly can be done by the user. Also available is an adjustable nozzle which can be drilled by the fertilizer dealer or user to give him an option of three different size orifices for adjusting the rate of application. The nozzles are made to insert in a 1/2-in. inside diameter hose and the size of the orifice is selected by rotating the nozzle cap. Secure the

literature by checking No. 6545 on the coupon and mailing it to Croplife.

No. 6548—Laboratory Crushers

The American Pulverizer Company's new bulletin, "Better Testing and Small Scale Reduction," describes laboratory crushers used for crushing laboratory samples, ores, chemicals and other diverse materials. Capacities of the crushers described range from 600-2,000 lb. per hour, depending on the materials and degree of fineness required. Typical installations are illustrated. The bulletin may be secured by checking No. 6548 on the coupon and mailing it to Croplife.

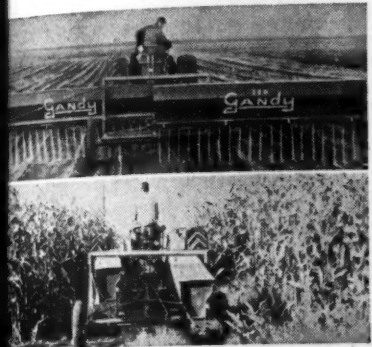
No. 6552—Heptachlor Brochure

"Heptachlor Kills A Wide Variety of Insects," is the title of a brochure published by the Velsicol Chemical Corp., which has been revised to in-

clude the latest federal label acceptances for Heptachlor. Close to eighty different insects killed by Heptachlor are listed and a brief statement of recommended dosages is given for each. The new brochure is expected to be of special interest to insecticide formulators, agricultural specialists, agricultural supply dealers and farmers throughout the country because of its condensed listing helpful in insect control planning. Copies of the brochure are available free of charge. Check No. 6552 on the coupon and mail it to Croplife.

No. 6546—Formulator's Folder

Formulators of all types of insecticides may secure without charge a publication entitled, "Pyrenone Facts Folder," prepared by the Fairfield Chemical Division of the Food Machinery & Chemical Corp. The contents include sections devoted to time-saving helps, resistant insects, household products, dairy sprays, gar-



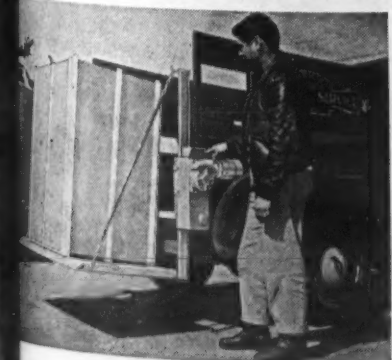
the application of two straight elements, one from each hopper. The unit is said to be ideal on cultivated land, pastures and hayland, as well as for side dressing six rows of corn one time or banding fertilizer as cotton. The seeding of brome grass, oats and other cereal grains and grasses is also possible. The unit is said to be suitable for custom work by dealers. Check No. 6543 on the coupon and mail it to Croplife to secure complete details.

No. 6550—Agricultural Chemicals Booklet

The Harshaw Chemical Co. has prepared a 20-page booklet entitled "Harshaw Chemicals for Agriculture." The contents include sections devoted to essential trace elements in plant nutrition, trace mineral compounds, fungicides, weed killers and miscellaneous agricultural compounds. Facts about the company and its facilities are included. In the booklet also are a list of agricultural chemicals manufactured by the company, other literature available from the company and supplementary reading suggestions. The booklet will be sent without charge if you will check No. 6550 on the coupon and mail it to Croplife.

No. 5652—Tail Gate

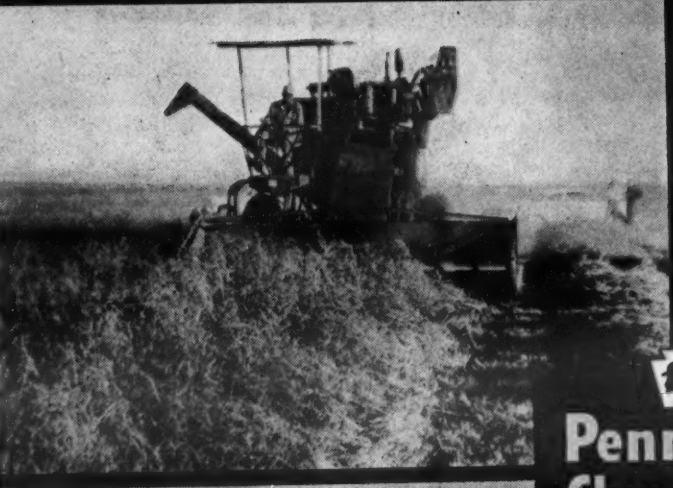

An electric tail gate for trucks, called by the trade name, "Jiffy-Lift," can lift up to 600 lb. in 15 seconds, it is claimed by the manufacturer, Mid West Body & Manufacturing. The tail gate's motor is reversible; it has a built-in motor brake and the heavy duty push button control has a built-in lock for security. The all-steel ramp unit weighs 225 lb. and is designed for 1/2- and 3/4-ton trucks. All moving parts run on ball bearings. The unit is designed to permit the truck to op-




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den and truck crop insecticides, livestock sprays and powders, food handling and processing, aerosols and pressurized sprays, condensed product data and specifications for the company's products. Formulators may secure the folder by checking No. 6546 on the coupon and mailing it to Croplife.

No. 5660—Display Fixtures

A four-page bulletin on store display fixtures, some of which are applicable to retail feed stores, has been issued by the Sitka Store Fixtures Co. The fixtures are designed to give maximum display and eye appeal to merchandise at strategic points where store traffic is at a maximum. The items also are designed for easy self-service. Interested dealers may obtain a free copy of the folder by checking No. 5660 on the coupon and mailing it to this publication.

No. 6547—Piperazine Booklet

A recently published booklet on piperazine is announced by the Dow Chemical Co. The booklet describes the properties, reactions and uses of the compound. Toxicological and handling information is included. Piperazine derivatives have been tested as fumigants, insecticides, fungicides and antimicrobials. Secure the booklet by checking No. 6547 on the coupon and mailing it to Croplife.

Best Practices Would Add \$56 Million to Illinois Soybean Crop

URBANA, ILL.—Illinois farmers would have over \$56 million more income from their soybean crop if they used the best soil treatments they know how to use.

A. L. Lang, University of Illinois agronomist, bases this estimate on

the 1956 yield figures from 761 soybean plots on the 23 soil experiment fields in the state.

Mr. Lang points out that soybean yields on all untreated soil plots averaged 15 bu. an acre. On the plots where the best soil treatments were applied, yields averaged 34 bu. an acre. Average soybean yield for all Illinois farms last year was 28½ bu. an acre.

So farmers averaged 13½ bu. more soybeans an acre by using some soil treatments than they might have if they had used no treatment at all. If they had followed the best recommended balanced fertility program, Mr. Lang says they would have been able to average another 5½ bu. an acre.

If this extra soybean yield had been obtained on all 4,750,000 acres harvested in Illinois in 1956, it would have added more than 26 million bushels to the crop. At \$2.15 bu., farmers would have had more than \$56 million more income from soybeans.

Despite Benefits, Use Of Limestone Lags On Iowa Farms

AMES, IOWA—Lime is a potential profit-maker on acid soils in Iowa. Yet agricultural census figures show an 800,000-ton decrease in annual lime use from 1950 to 1956, points out Joe Stritzel, Iowa State College agronomist.

He thinks the decline may result in part from farmers' not realizing the benefits that come from proper use of limestone on cropland. The following summary, he believes, may put light on any uncertainties about liming.

The major value of lime is in neutralizing soil acidity. This reaction results in indirect benefits, too.

Activity of soil bacteria is stimulated, with the result that more nitrogen and phosphorus are released from the organic matter of the soil. Inorganic phosphorus is also made more available.

OVER THE COUNTER

(Continued from page 9)

at planting time. He applied aldrin at planting time to take care of the soil insects, for some of this land had been in corn at least one year before.

All in all, he figures he spent about \$30 an acre for lime and fertilizer and insect control.

Mr. Young made sure he had enough stalks per acre—about 16,000 to 17,000 of them. He cultivated to take care of the weeds. Altogether he reckons that he had some \$65 to \$70 an acre invested in this land.

On one 40 that he rented, the tenant for the year before suggested that he would lose his shirt trying to grow corn on that land.

At harvest time last fall, those 23 acres averaged right at 85 bu. of corn. One part of one field, by accurate check, went 112 bu. per acre.

From this variation Mr. Young found that he was not putting on enough fertilizer for top yields. He certainly needed more nitrogen than the 100 pounds an acre he had used this year. And as he upped his nitrogen he could well need more phosphate and potash. For where corn followed beans that were too small to crop to harvest the year before, the yield went up to about 112 bu. per acre.

Before going into the field with picker shellers and a corn combine to harvest the corn, Mr. Young shucked out representative sacks of corn to show the yield in three parts of the field.

Mr. Young put these in one corner of his well filled place of business in Big Foot, where farmers coming in would have a chance to see and ask questions. They did see the sacks and did ask questions.

Furthermore, most all the neighbors were watching these fields of corn all through the summer, and of the strength of the sacks of corn in Mr. Young's place of business and of the strength of what farmers have seen of the corn in the field, he has considerably more farmers contracting for their fertilizer needs in 1957.

Mr. Young is so well sold on his all-out demonstration, that he is aiming at 600 acres of corn this coming year.

In all cases he is hedging against a possibly unfavorable season by getting a 3-year option on all land where he moves in with what it takes to grow corn. So, if he does not hit any one year, he will have a couple more to make up for it.

If corn was worth \$1.10 bu. last fall, then Mr. Young not only had a convincing demonstration for farmers in the area, was able to learn a lot about corn growing himself, but in addition could well have made a sizable profit from the 230 acres.

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Penick now offers this promising new plant-growth stimulant in a convenient special formula that simplifies application in the small amounts required.

One level teaspoonful (2.5 grams) in one pint of water makes a solution containing 10 p.p.m. of gibberellic acid, the concentration that has generally produced the best response. Of course, other concentrations can be made by varying the amount used.

Since supplies of BRELLIN are limited, all orders are subject to availability and confirmation.

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Advertisement



FARM SERVICE DATA

Extension Station Reports

Wheat yields could be increased at least 9½ bu. per acre by the use of nitrogen plus needed phosphate and potash fertilizer, according to Floyd J. Smith, Kansas State College agronomist.

Mr. Smith reports that wheat responds more profitably to fertilizer than any other crop. The 9½ bu. increase could be accomplished by the use of only 25 lb. of nitrogen per acre, plus necessary phosphate and potash fertilizer. He points out that in some cases, an extra four bushels per acre can be added to the wheat yield by doubling the nitrogen application.

★

Nitrated grass pastures produced high beef gains as legume-grass mixtures last year at the University of Illinois Dixon Springs Experiment station.

G. E. McKibben, station crops and soils specialist, reports that 60 steers averaged 1.38 lb. daily gain on six 5-acre nitrated grass fields between April 11 and May 31, 1956.

Two of the fields were redtop-timothy mixture, while the other four were one each of fescue, orchard, brome and blue grass. All these fields were treated with 200 lb. of ammonium nitrate an acre in the spring in addition to 100 lb. an acre the previous fall.

The same steers grazed six adjoining 5-acre fields from June 1 through July 3 and again from Aug. 13 to 31. The same grasses were in combination with ladino clover and alfalfa in these fields. Average daily gains were 1.18 pounds.

The nitrated grass fields yielded an average of 5,981 lb. of dry matter an acre, or 1,702 lb. more than where no nitrogen was used. That's 17 lb. of dry matter for every pound of actual nitrogen used, or ½ pound for each pound of ammonium nitrate used.

On the grass-legume fields, the steers ate 7,072 pounds of dry matter an acre, compared with 4,472 pounds

on the nitrated fields. They ate 31.29 pounds of dry matter for each pound of gain on the grass-legume fields and 31.57 pounds on the nitrated pastures.

Mr. McKibben points out that these comparable gains will be true for both types of pasture only when the nitrated grass and the ladino-alfalfa-grass mixtures are pastured in season.

★

Seed corn should get both an insecticide and fungicide treatment before planting to protect from seed-attacking insects and soil diseases, say University of Wisconsin entomologists.

In tests on wire-worm infested soil at the Marshfield Branch Experiment Station last year, J. W. Apple and F. E. Strong, entomologists, obtained a 91% stand from seed treated with insecticide and fungicide; seed treated with fungicide only produced an 87% stand, while untreated seed gave an 84% stand.

Best in the test was a 98% stand produced by seed treated with a diel-drin-fungicide mixture and planted in soil which had received one and a half pounds of heptachlor per acre worked in before planting.

Another test in wireworm-infested soil showed a 43% increase in stand and a 67% increase in corn silage production when 0.16 or 0.25 ounce of diel-drin was used per bushel of seed.

★

Michigan State University research workers are finding that trees will make much better growth in many cases if they receive fertilizer. This is true generally on poorer soils, such as old farm lands, burned-over areas, and strip mining sites.

Donald White, forestry specialist, says that many tree plantings have shown rapid responses when treated with fertilizers. Color and vigor of the foliage have been much improved and short term height growth has doubled. Christmas tree growers have seen a real possibility of reviving plantings they had written off as worthless, he reports.

★

A Missouri agronomist reports that fertilizer can find a big market ahead in using plant food to grow higher quality protein feed for livestock.

Dr. William A. Albrecht, head of the University of Missouri's soils department, says that improvement in the feed's protein quality due to soil treatment can vary considerably with the crops fertilized.

Well-fertilized red clover, he says, converted nitrogen into crude protein for much higher feed values than did well-fertilized timothy hay, in Missouri tests. And, in turn, the feed value of the proteins in red clover, he says, was considerably higher on well-fertilized fields than on those that had received lesser treatments.

Weight gains of rabbits fed well-fertilized red clover hay were 700% higher in a four-week feeding period than were those fed red clover hay from plots receiving lesser treatments.

These top gains, says Mr. Albrecht, came from plots in a four-year rotation that were given magnesium limestone, crop residues and fertilizer according to soil test suggestions. These plots had received earlier treatments of lime and of nitrogen, phosphate and potash fertilizer. The red clover giving the low feed values, came

The Bulletin Board

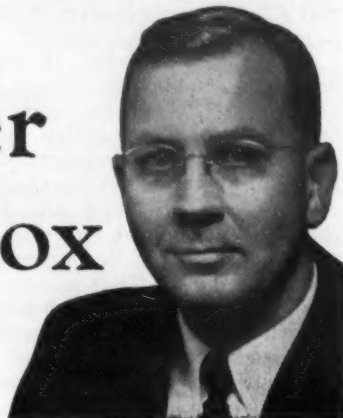
No. 24 in a series from the Spencer Chemical Magazine, "Today's Fertilizer Dealer"

The Spencer Question Box

Edited by

Proctor Gull

Chief Agronomist, Spencer Chemical Co.



"The Question Box" is one of the most popular features of TFD, Spencer Chemical Company's magazine for fertilizer dealers. Questions submitted by dealers are answered by Proctor Gull, head of Spencer's 7-man field agronomy team. Here are a few timely questions and answers from recent issues of TFD.

1. QUESTION: Wouldn't it be better if "Mr. N" Ammonium Nitrate were not acid-forming? Could this be done? —C. D. Ridley, V-O Fertilizer Co., Lexington, Ky.

ANSWER: Yes, any ammonium nitrate could be made non-acid forming. However, to do this would reduce the nitrogen content of the material and would increase the cost of manufacture. The net result would be an increase in the cost of the nitrogen.

This increase would show up in two ways—one, in increased cost of manufacture, and also in increased freight cost per ton of actual nitrogen moved.

Liming materials are generally so inexpensive as an acid-correcting medium that it is much more economical to use high-analysis fertilizers (even though they are "acid-forming"), and apply lime to the soil to correct acidity, than it would be to add lime to a fertilizer material solely to correct the acid-forming properties of the material.

Soil acidity comes about by several processes: Leaching and weathering, plant growth and, too, certain soils are acid because the materials from which they are derived were acid. There is much confusion concerning the so-called acid-forming properties of some fertilizer materials. Phosphoric acid is acid-forming because it is introducing acid directly to the soil. Ammonium nitrate, urea, anhydrous ammonia and ammonium sulfate are said to be acid-forming materials. But these first three are either neutral or strongly basic when they are first applied to the soil. The natural processes in the soil change ammonia to nitrates, which form nitric acid. When these materials are leached from the soil in the nitrate form, they take with them basic ma-

terials such as calcium, magnesium, potassium or sodium and, in so doing, leave the soil more acid, because the natural acid-forming processes of the soil replace the bases that have been taken out.

Plant growth is also an acid-forming process, since plant growth takes from the soil bases such as calcium, magnesium and potassium in considerable quantities. These bases are also replaced in the soil by the natural acids that are formed as a result of plant growth.

Most so-called neutral fertilizers that carry acid correcting materials are not generally the answer to acid soils. These materials do not carry sufficient liming qualities to correct the natural acidity of the soil and at the same time off-set the so-called acid-forming properties of the fertilizer material. In the long run, therefore, liming would have to be carried out to correct soil acidity even if the material used were non-acid forming! The farmer would then pay a high price per pound of nitrogen and still have to use lime to correct the soil acidity caused by other factors.

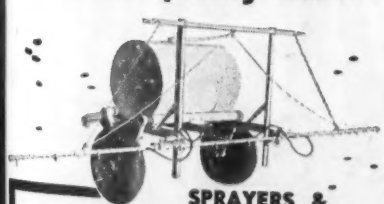
Some materials marketed in your area today are advertised as non-acid forming, which contain some element other than calcium, such as sodium. These materials may be non-acid forming, all right, but such elements as sodium are non-essential plant nutrients, and are a poor substitute for lime. Prolonged use of such materials could lead to difficulties in crop production.

It all boils down to the fact that there really is no substitute for lime. That's why we do not think it is to your customer's advantage to produce a non-acid forming ammonium nitrate.

2. QUESTION: We raise a lot of watermelons in our county. What kind of fertilizer should we use? —LeRoy Wood, Security Elevator, Solomon, Kansas.

ANSWER: General recommendations are 25 to 50 pounds of nitrogen (75 to 150 pounds of ammonium nitrate) per acre, and 250 to 500 pounds per acre of 10-20-0 or 10-20-10, all applied before planting. An additional 100 pounds of ammonium nitrate is recommended at vining.

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from plots in a three-year rotation that had a soil treatment of manure and supplemental nitrogen.

★

Three new herbicides have brought promising results in tests at the University of Minnesota. The three chemicals are "butyrics," Simazin and CDAA, according to R. S. Dunham, university agronomist.

"Butyrics" actually include two different kinds—the 2,4-D butyric and the MCP butyric, according to Mr. Dunham. They differ in chemical form from our present 2,4-D and MCP herbicides. Butyrics don't affect plants until absorbed and changed chemically by plant enzymes. Some plants possess the necessary enzyme and some don't. That means the butyrics are "selective" herbicides.

So far, though, it isn't known how butyrics affect all crops and weeds, but it is known that they aren't as harmful to clover as 2,4-D. Judging from preliminary tests, they appear to give some control on perennial sow thistle and Canada thistle.

Simazin has given satisfactory weed control in corn, both when applied to the soil before the corn emerges and on post-emergence applications. At rates necessary for weed control, it hasn't caused any damage to corn. It also gives complete vegetation control if perennial grasses aren't a problem.

CDAA has been particularly successful as a pre-emergence treatment on grass weeds in soybeans and corn. Tests in 1956 show that it is one of the most effective chemicals presently available for controlling wild oats, Mr. Dunham says.

★

Much of the durum wheat seed slated for spring sowing carries disease-producing fungi, cautions L. A. Jensen, North Dakota Agricultural College extension agronomist.

Commonest of the diseases that will probably plague many unprepared North Dakota durum farmers will be blackpoint. This is a fungus disease often seen on the germ portion of the wheat seed. Last year, high winds, hail, excessive rains and early freezing temperatures in various parts of the state combined to make conditions favorable for the development of fungus diseases.

Because of this situation, NDAC plant pathologists have conducted extensive laboratory studies on samples of the 1956 durum crop to determine the fungi present and the percentage of emergence of treated and untreated seeds.

Their tests reveal that the farmer will be money ahead to treat his durum seed before sowing. In laboratory tests, the average emergence of treated samples was 86%, as compared with the 72% emergence of untreated seeds. This demonstrates that treating means increases of 14% in field stands.

★

Permanent pasture, usually land too steep or gullied to cultivate, or former crop land drained of its fertility through continuous cropping, is the most neglected part of many farms.

That is the view of C. D. Fay, Purdue University agronomist, who points out that the permanent pasture can be improved by either topdressing with lime and fertilizers or by complete renovation of the existing sod.

Use of fertilizers and lime on established pasture, Mr. Foy says, can be expected to increase yields from 25 to 100%. Complete renovation often will result in increases of 200 to 500% in yields.

On pastures consisting primarily of grasses Mr. Foy recommends the application of 40 to 50 lb. of nitrogen per acre in early March. Maximum response, to such treatment, however, will require an adequate supply of phosphate and potash in the soil.

Renovation of old pastures involves,

first, determining lime and fertilizer needs through soil tests. Then the existing sod must be plowed or disced to make a good seed bed, fertilizer and lime applied, and the pasture reseeded to a mixture of more productive legumes and grasses.

For new seedings the "band seeding" method—placing part of the fertilizer in bands directly beneath the seeds—is recommended. Phosphate applied by this method is particularly effective in stimulating development of young seedlings on low phosphate soils, Mr. Foy says.

When fertilizer requirements are large (400 to 600 lb. per acre), about 200 lb. should be used in "band seeding" and the remainder broadcast and disced into the soil prior to seeding.

Mr. Foy asserts that on light colored soils the use of 10 to 20 lb. of nitrogen per acre in the mixed fertilizer, banded near the seed, will hasten seedling establishment.

After a crop has been removed from the renovated pasture, the stand should be topdressed with phosphate and potash to maintain yields at a high level. A 3½ ton crop of alfalfa-grass forage will remove about 40 lb. of P₂O₅ and 130 lb. of K₂O per acre per year. If the forage is removed for hay or silage all of this phosphate and potash should be replaced to maintain yields at that level.

If the crop is used for pasture, where some manure is returned to the land, the potash maintenance may be reduced to about half of that which would have been removed in a hay crop. Mr. Foy says an average maintenance fertilizer recommendation would be the equivalent of 250 lb. of 0-20-20 topdressed per acre annually. The fertilizer may be applied at the time of year most convenient for the farm operator.

★

An Ohio farm economist reports that the fertilizer dollar returns the most profits when farmers follow good crop production practices. R. H. Blosser, of the Ohio Agricultural Experiment Station, says that the same amount of fertilizer can give much higher corn yields per acre with good crop production practices than with poor ones.

An 800 lb. application of fertilizer produced 35 more bushels of corn per acre with good practices than did a 200 lb. application, says Mr. Blosser, in citing figures based on Ohio experiments. But when poor methods were used, the increase from the higher fertilizer application was only 20 bu.

Good production practices include careful land preparation, prompt planting, soil-building rotations, liming where needed, the use of well-adapted seed varieties and enough stalks to make use of all the nutrients the soil can provide.

Poor practices, says Mr. Blosser, include soil-depleting rotations, insufficient liming, poor drainage, the use of low-yielding corn varieties, late planting and not enough seed.

The Ohio tests indicate that 800 lb. of fertilizer per acre added about \$35 more profits than did the 200 lb. application when good production practices were used. But when poor practices were used, the profit increase was only \$15 per acre from the 800 lb. plant food application.

★

Alabama can have good corn if growers will use all the best production practices, O. N. Andrews, Alabama Polytechnic Institute extension agronomist says. Seed plays a major role in determining yield, and he urged that all corn planted this year be the best hybrid corn—not just any hybrid.

Fertilizer also is a prerequisite of a good yield. Better yields come from fields fertilized according to soil test recommendations. Where no soil test is made, Mr. Andrews recommended the use of 250 lb. of 4-12-12 or 350 lb. of 8-8-8 per acre before planting. During the second cultivation, corn should be side-dressed to bring the total nitrogen content up to between 60 and 90 lb. per acre.



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SHIFT TO FARM CHEMICALS

(Continued from page 9)

side of the retail store. Many motorists see it and stop in for a look and many buy. And when they buy shrubs and trees they often buy other garden and lawn items, too.

3. Displays for browsing customers. The Sluggs believe in good displays. There are many of them at their store. They feel that the garden and lawn customer likes to browse about a store when he comes in and their traffic aisles have been laid out to accommodate such people.

For instance, both Pat and Hugh have experimented with various types of display islands, and they now have settled on one which they feel works best for their type of store. They use a home constructed island, which is 3 ft. wide and 7 ft. long. It has two open shelves and three sets of wrought iron legs. The shelf levels are of ½ in. plywood.

A great deal of merchandise can be shown on such islands, and yet they are open enough and low enough so as not to block a customer's overall view of the store. Such islands also afford a lot of browsing space in the store, by providing more aisles for the customer to wander around in and thus see more merchandise.

4. Balance between farm and city trade. Even though the Sluggs are working hard for the city and suburban trade, this does not mean that they have forgotten the farmers. There are quite a few farmers who still come here for fertilizer, seeds and other supplies. Many of these farmers also have large gardens and these are garden seed and tool customers as well.

That the store sells many farmers, too, can be realized from the fact that approximately 1,700 tons of fertilizer are sold each year. Through the retail store, about 1¼ tons are sold daily from April 1 until June 1. After June to Nov. 1 more than a ton daily moves through the retail store. This is in addition to the fertilizer farmers buy for their fields. A large farm seed stock is well patronized by the rural customers.

5. Pet department. In 1950, the Sluggs opened a small scale pet supplies department. They sought another line which would help build volume during the winter months. This pet supplies section has done so well that it has recently been expanded to cover an area of approximately 20 by 30 ft. In addition to stocking pet foods, frozen horse meat, and other supplies, the Sluggs also sell

parakeets, cages, and also tropical fish.

"The pet supplies department has exceeded our expectations," says Pat Slugg. "It fits in very nicely with our garden supply program. Many pet owners also have lawns and gardens that need attention and supplies, so such customers can make a one stop visit at our store. The volume fills in well in the winter season."

The firm now issues a very large and complete catalog to its dealer customers, more than 600 of them in this area. For retail trade advertising, the Sluggs do some newspaper and direct mail. And they also like to exhibit their store products at church functions. They buy a booth space and exhibit their wares, often contacting many garden and pet supplies customers.

Pat Slugg states that he and his brother estimate that when a man buys a new home and must landscape and seed a lawn, he will spend from \$150 to \$200. They use figures like this when quoting prices to inquiring prospects, and they can back up their estimates by experiences of other customers.

Spring Promotion Day Boosts Sales Of Farm Chemicals

A Spring Fertilizer and Seed Day, staged in late February each year, is the best sales promotion used by the Farmers Exchange, Waverly, Iowa, according to Jim Volk, manager.

At such an event, usually held right on the premises of the sprawling mill, the salesmen for the various fertilizer and seed companies are on hand all day long and farmers can talk with them about their requirements. Farmers have been coming to these annual days held in the spring by Farmers Exchange for many years, and the word quickly gets around when the annual announcements are made.

"We get a large turnout each year," says Mr. Volk. "There is nothing high powered about the event. Farmers, salesmen and others just stand around and visit and consult. Of course, we give coffee and a light lunch, and this is always popular."

Mr. Volk says that a large volume of fertilizer and seed orders is booked on that annual date. Farmers have fixed that day as the proper day to make up their minds what fertilizer and seeds to get and they order that way. Of course, some fertilizer and seed orders are booked earlier, too.

"We have been trying to push fall fertilization for several years, but it is a slow job here," says Mr. Volk. "However, I do feel that farmers are going to swing around to fall ordering, as county agents and others are backing this sort of program."

The firm also sells quite a few farm chemicals, especially weed sprays. It handles a weed sprayer at \$148 which is a popular seller with local farmers.

The firm also has a seed cleaner, and when a farmer has seed cleaned, the firm usually manages to talk fertilizer with him, too. Extra selling like this usually pays off.

When a farmer wants fertilizer spread in bulk, then Mr. Volk usually calls in a custom applicator who handles such work in addition to lime spreading.

"We have quite a feed volume, too," Mr. Volk states, "and do a lot of grinding and mixing. This naturally puts us in close contact with many farmers regularly, and helps us sell fertilizer and chemicals in season, too."



SPRAYER CUSTOMER—Hugh Slugg (right), W. G. Slugg Seed & Fertilizer Co., Inc., North Milwaukee, Wis., is explaining the fine points of a sprayer to a customer. The action was photographed in the firm's showroom which was formerly a filling station and adjoins the seed store. The Slugg firm, faced with a changing market caused by their location in a growing suburban community, has switched to farm chemicals and allied products in recent years and have found the change profitable.



Doing Business With

Oscar & Pat

By AL P. NELSON
Croplife Special Writer

Roly poly Gib Franklin, battered felt hat shoved far back onto his broad forehead, came ambling in through the open door from the warehouse to the salesroom of the Schoenfeld & McGillicuddy Co. Spotting Oscar, Gib chewed reflectively on a wad of tobacco, then approached.

"Hi, Oscar," he greeted cheerfully. "When are you and Pat going to close up your business?"

Oscar swung around in his ten year old swivel chair, his eyes popping wide. A question like this, with its tremendous implications, was

about the only thing which would make him so much as look up when a customer entered. Oscar was a man really dedicated to his task—that of cutting costs.

"Close up? Ach, what is this?"

Gib raised his eyebrows. "You guys might as well. You sure ain't gonna sell much fertilizer this year around these parts. Especially not after that meeting at the Grange Hall last night. Of course, maybe if you get hard up this summer I kin give you a part time job cultivating corn. I'll guarantee to get

that pot of yours down in about 10 days."

Oscar flushed. "What are you talking about? Ach, we are not thinking of going out of business."

"Well, maybe you ain't thinking about it?" said Gib soberly. "But things happen jest the same. And of course when the county agent said what he did, he didn't mean to hurt your fertilizer business. He was jest sayin' what he thought, and by golly, I think he is right."

Oscar's face was very red. "Well, what's the matter with that man? Ach, he had better be careful what

he says about us. He lives on the taxes we pay, too. Some people don't know when to keep their mouths shut!"

Gib Franklin leaned on the wooden railing which fenced in the office area from the rest of the showroom. "Well, look at it this way, Oscar. We have had some mighty dry years around here the last three years ain't we?"

Oscar nodded.

"And we've been fertilizin' heavy but because of the drouth, we didn't get capacity corn crops."

"But you got some pretty good ones," Oscar interjected.

Gib Franklin frowned. "Not good enough. Farm costs are so high today the farmer's got to get super duper crops to make any money. And we didn't get 'em—period."

Oscar's lips tightened. He hated wordy farmers.

"Now the county agent pointed out," Gib said slowly, "that in dry years the corn don't use all the fertilizer, because the moisture of the soil ain't up to snuff. So there is carryover of some of the fertilizer to the second and the third year. We've had three years drouth. Boy, what a fertilizer carryover there must be in our soil. We should have so much fertilizer left in our corn soil that we could sift the soil, get out the fertilizer and sell some of it back to you."

Once more Oscar paled. This was indeed a terrifying thought, but then no farmer would go to all that work.

"And so," Gib Franklin said, "was talkin' to some other farmer after the meetin', and we kinda decided that we ain't gonna use any fertilizer this year, Oscar. We are gonna use up what's in the ground first. And that's why you ain't gonna sell us any. I feel sorry for you."

Pat McGillicuddy had come in a few minutes before, and while hanging up his hat and coat had overheard some of the conversation.

"Hi, Gib," he said. "So you have figured out a way to get by without using fertilizer. Good for you."

Oscar looked at Pat in amazement. What was the matter with his partner? To side in with Franklin in such a condition! If they sold no fertilizer, the months ahead would indeed be slim. This was no time for Irish jokes.

So Gib related his story to Pat and the tall partner listened attentively. "Sounds good," Pat smiled, "on paper, or when you spiel it. But there is a catch to it."

Gib bristled a little. "A catch? What do you mean?"

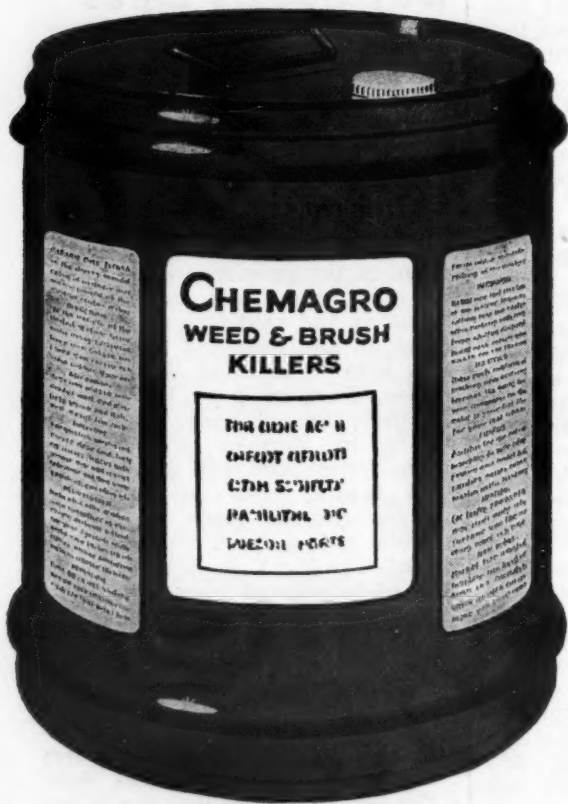
Pat shrugged. "Suppose the drouth is broken this year and we get lots of rain. The corn will grow like mad, and there won't be enough fertilizer in the ground. The leaves will turn yellow, the tips of the ears will shrivel with stunted kernels and the corn borers will get an early start maybe."

Gib snorted suspiciously. "Dar, you, Pat, I suppose you want us farmers to use a lot of fertilizer again just on a chance it might rain heavy. Suppose it don't rain. Suppose it's dry again."

Pat looked at him innocently. "Well, don't take my word for it. Take the county agent's. Or yours. You just said that there's a carryover of fertilizer value from one dry year to another. So if you fertilize this year again, dry or wet, you're bound to win. But if you don't fertilize, you could lose."

Gib Franklin muffled a curse. "Pat, you have the darndest way of putting things. But maybe you're right. We wouldn't be losin' too much if we had another dry year. There'd be a carryover value of somethin' anyway. And man, think of what might happen if it rained real hard and we got lots of fertilizer in the ground. I reckon I'd better fertilize, Pat."

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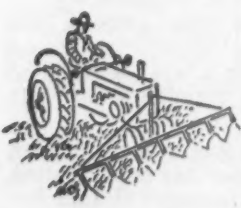
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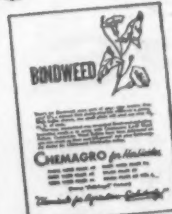
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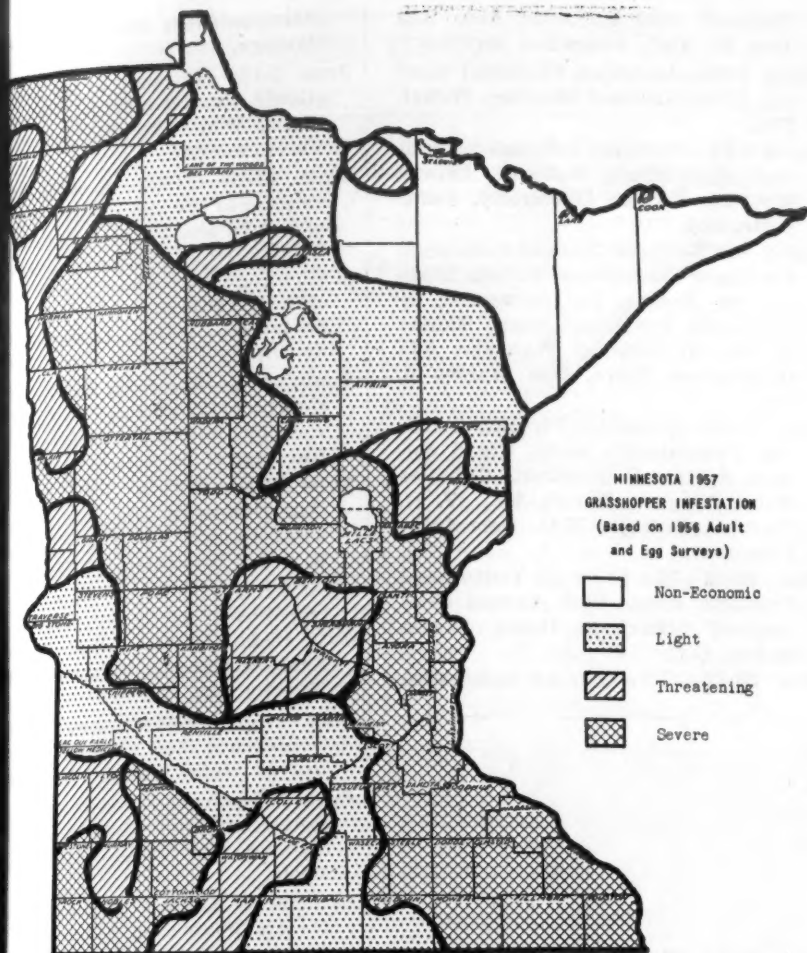
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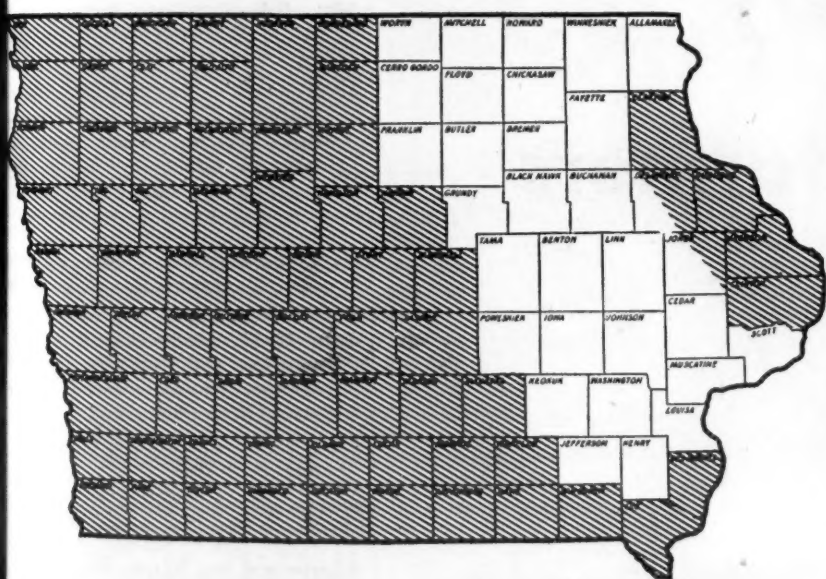
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MIDWESTERN OFFICES IN ST. LOUIS, CHICAGO AND MINNEAPOLIS



GRASSHOPPERS FOR 1957—The Minnesota Department of Agriculture has issued the above map, based on 1956 adult and egg surveys, showing the expected populations of grasshoppers in the state this year. Severe infestations are expected in the southeastern, southwestern and west central portions of the state, with light and non-economic numbers in the northeast.

SPOTTED ALFALFA APHID IN IOWA



SPOTTED ALFALFA APHID INFESTS IOWA—This map of Iowa, prepared by the plant pest control branch of ARS, USDA, shows the counties in Iowa where spotted alfalfa aphids are known to be located. The shaded portions of the map, indicating the presence of this pest, do not necessarily denote the actual limits of the infestation, according to USDA, since many areas in the unshaded portion of the map were not surveyed carefully. The above conditions were as of the fall months.



SOIL TESTING EXHIBIT—An exhibit illustrating the value of soil testing in determining the proper fertilizer application on the farm has been prepared by the Exhibits Service, U.S. Department of Agriculture, Washington. In connection with the exhibit, a desk is provided for use in displaying and disseminating soil testing literature or for receiving samples of soil for testing. The over-all dimensions of the exhibit are 12 ft. aisle frontage, 6 ft. depth, and 7 ft. height, and the shipping weight is 450 lb. The booth is available, on loan, from the department's Exhibits Service on a basis whereby the borrowers are asked to absorb the cost of transportation and provide space, handling and any necessary local drayage. Initial inquiries should indicate the dates and locations of occasions for which the exhibit is intended. The National Plant Food Institute cooperated with the department in the planning of the exhibit.

Nitrogen Talk

LOGAN, UTAH—Use of nitrogen in proper amounts will mean a substantial increase in income to Utah farmers, a United States Steel Corp. official said in Logan recently. Robert C. Myers, Pittsburgh, director of USS market development division, spoke at a luncheon of the Cache Chamber of Commerce. He said revenue can be increased by proper fertilization. Many marginal farmers can realize a profit, and many farmers will move upward toward a better standard of living, he said.

Coke Oven Ammonium Sulfate Output Declines

WASHINGTON—Coke oven production of ammonium sulfate during January totaled 161,660,987 lb., compared with 169,467,526 lb. in January, 1956, according to the Bureau of Mines. Sales last January amounted to 188,603,713 lb., a gain from sales of 162,223,272 lb. in January, 1956.

Stocks on hand at the end of last January totaled 341,675,353 lb., a reduction from 368,582,822 lb. a month earlier and 413,882,511 lb. a year earlier.

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MEETING MEMOS

April 3-4—South Carolina Entomological Society, Second Annual Meeting, Francis Marion Hotel, Charleston, S.C.

April 29-May 1—Pacific Northwest Pest Control Operators Assn., New Heathman Hotel, Portland, Ore.

May 3-4—School for Chemical Analysts in Industry and State Laboratories, Purdue University, Lafayette, Ind. Sponsored by National Plant Food Institute.

Oct. 3-5—Pacific Northwest Plant Food Assn., Annual Convention, Sun Valley, Idaho, Leon S. Jackson, Lewis Bldg., Portland 4, Ore., Secretary.

Oct. 14—Sixth Annual Sales Clinic of

the Salesmen's Assn., American Chemical Society, Hotel Roosevelt, New York.

Oct. 17—Conference on Chemical Control Procedures for Industry Chemical Control Analysts, Shoreham Hotel, Washington, D.C. Sponsored by National Plant Food Institute.

EDITOR'S NOTE—The listings above are appearing in this column for the first time this week.

April 2—Western Agricultural Chemicals Assn.; Spring Meeting, Hotel Biltmore, Los Angeles, Cal.; C. O.

Barnard, 2466 Kenwood Ave., San Jose 28, Cal., executive secretary.

April 7-12—American Chemical Society, 131st National Meeting, Miami, Fla.

April 8-10—National Institute of Animal Agriculture, Seventh Annual Meeting, Purdue University, Lafayette, Ind.

April 14-15—Fifth Annual California Fertilizer Conference, Fresno State College, Fresno, Cal. Sponsored by California Fertilizer Assn., Sidney H. Bierly, General Manager, 475 Huntington Drive, San Marino 9, Cal.

May 13-15—Carolinas-Virginia Pesticide Formulators Assn., Third Annual Spring Convention, Cavalier Hotel, Virginia Beach, Va., W. R. Peele, Raleigh, N.C., Secretary-Treasurer.

May 20-21—National Cottonseed Products Assn., 61st Annual Convention, Shoreham Hotel, Washington, D.C.

May 20-22—Chemical Specialties

Manufacturers Assn., Drake Hotel, Chicago.

June 9-12—National Plant Food Institute, annual meeting, Greenh Hotel, White Sulphur Springs, Va.

June 17-19—Fifteenth Annual Convention of the Association of Southern Feed and Fertilizer Control Officials, Dinkler-Tutwiler Hotel, Birmingham, Ala., Bruce Postone, Kentucky Agricultural Experiment Station, Lexington, Ky., Secretary-Treasurer.

June 23-26—American Society of Agricultural Engineers, Golden Anniversary meeting, Michigan State University, East Lansing, Mich.

June 26-28—Eighth Annual Fertilizer Conference of the Pacific Northwest, Benson Hotel, Portland, Ore., B. R. Bertramson, Washington State College, Pullman, Wash., chairman.

July 10-14—Plant Food Producers Eastern Canada, Manoir Richelieu, Murray Bay, Quebec.

July 17-19—Southwestern Fertilizer Conference and Grade Hearings, Galvaz Hotel, Galveston, Texas.

Sept. 5-6—Great Lakes States Ammonia Meeting, Michigan State University, East Lansing, Mich.

Sept. 8-15—International Congress on Crop Protection, Hamburg, Germany.

Oct. 2-4—Eleventh annual Beltway Cotton Mechanization Conference, Shreveport, La.

Nov. 3-5—California Fertilizer Association 34th Annual Convention, St. Francis Hotel, San Francisco. Sidney Bierly, General Manager, 475 Huntington Drive, San Marino 9, Cal.

Nov. 6-8—Fertilizer Industry Round Table, Sheraton Park Hotel, Washington, D.C.

Dec. 11-13—Agricultural Ammonia Institute, Seventh Annual Meeting, Hotel Marion, Little Rock, Ark., Jack F. Criswell, Claridge Hotel, Memphis, Executive Vice President.

1958

Jan. 7-8—Texas Fertilizer Conference, Texas A&M, College Station, Texas.

Jan. 13-15, 1958—Weed Society America and Southern Weed Conference, joint meeting, Peabody Hotel, Memphis, Tenn.

Jan. 21-23—California Weed Conference, San Jose, Cal.

Julian A. Rogers Named to New Post With W. R. Grace

NEW YORK—W. R. Grace & Co. Polymer Chemicals Division has appointed Julian A. Rogers head of manufacturing department of its high density polyethylene plant in Bay Rouge, La.

Mr. Rogers was formerly head of the ammonia department of Grace Chemical Co. in Memphis where recruited and trained operating personnel. He also was responsible for the start-up operations of Grace's 200 tons per day ammonia plant and continued as department head for the first three years of production of the plant.

Prior to joining Grace, Mr. Rogers was ammonia plant superintendent of Mississippi Chemical Corp. from 1946 to 1952. From 1939 to 1950, he was chief supervisor of Hercules Powder Co.'s ammonia plant at Hercules, Cal.

CONSERVATION MEETING

PORTLAND, ORE. — A regional conference of the 11 western state soil conservation committees is scheduled here April 26-27 with the Oregon state committee as host, announces Glen Purnell, executive secretary with offices at Oregon State College. This will be the first time the Western states' committees have met and will be proposed as an annual conference, Mr. Purnell said.

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EARL COKE

(Continued from page 7)

national lending agencies can finance only a portion, if any, of a farm mortgage. However, the fact that farm mortgages are held by such volume seems to indicate no shortage of credit in this field. Certainly our need is not for more people to leave agriculture. One advantage of the current high land prices is the encouragement it offers those farmers on economical-sized units, or those whose management practices are below standard, to get out of agriculture into some occupation offering them greater opportunity.

Since 1950 there has been a reduction of 600,000 farms in the U.S. It is estimated that one-third of all farm sales were for the purpose of adding to existing farms. For the most part, farmers sold their property voluntarily and with financial gain.

I find no indications that the form of terms in which long-term capital flows into agriculture exerts an adverse effect on the kind of commodities produced. That is, the flow of long-term capital does not seem to direct production away from those commodities most desired by consumers. In this respect, it is neutral.

Let us turn next to non-real estate farm loans in the U.S. These include loans for livestock, crops, machinery and chemicals, and totalled nearly \$303 million as of Jan. 1, 1956. This is an increase of only \$67 million over 1955, and \$1,741 million over 1950. Commercial banks held the major amount of these outstandings—71%. Production Credit Associations held 10.3%. Farmers Home Administration 6.4%, Federal Intermediate Credit Banks 1% and Commodity Credit Corp. 11.3%. Unfortunately, the data available do not accurately reflect the total volume of seasonal loans to agriculture but only loans outstanding as of one particular time. Furthermore, Jan. 1 is the low period in the year for loans outstanding, but it is our most recent figure.

There has been much discussion in recent times of the need for intermediate credit for agriculture. One state farm organization passed a resolution at its recent annual meeting stating that there may be a need for "loans for two to seven years bridging the gap between short and long term credit . . . for the purchase of machinery and equipment, improvement and construction of farm buildings, and establishment of some types of livestock operations." This would indicate there is need for a type of credit not now available, although I find it difficult to determine just where the vacuum exists.

The Federal Reserve System in its recent analysis of agricultural lending by insured banks showed that in the U.S. 33.4%, or \$1,285 million, of all agricultural loans outstanding as of June 30, 1956 was in this intermediate-term field. These included loans for acquiring machinery, livestock, autos and other consumer goods, and for improvement of land and buildings. Twenty-seven percent of the money loaned by all insured commercial banks in the U.S. for these purposes had a maturity of two years or more, and ranged all the way to 10 years duration. It would appear therefore that although there may be some types of intermediate loans not now available, there are substantial sums available to service loans of this kind.

Let us now return a little closer home and discuss the commercial bank's place in making money available to farmers. As stated earlier, commercial banks held 71% of our

farm non-real estate loans outstanding as of June 30, 1956. How they make this money available is important to the farmers and to you in the agricultural chemical field. Three general methods are used:

1. The discounting of paper held by those selling production supplies to farmers.
2. Unsecured lines of credit for seasonal operations and expenses.
3. Loans backed by crop and chattel mortgages.

While loans in the last two categories, i.e., unsecured lines of credit and those secured by chattel mortgages may be made for a few specified purposes, in general and by far the largest number are set up to finance all the out-of-pocket costs of production. When I say all, I mean all. Experience has amply demon-

strated the folly of undertaking a financing obligation which does not include provision for all items and operations necessary for efficient production, such as spray materials and fertilizers.

Once the bank or lending agency has made a commitment to finance a farmer's seasonal requirements, there is no turning back in mid-stream. To do so may not only bring disaster on the borrower but the lender might find himself an unwilling partner in a distressed business. Besides, it is an indication of poor planning and business management on his part.

Therefore, before entering into a financial relationship with a farmer, the anticipated cash outlay for expenses as well as anticipated returns from sales should be carefully projected through the season. In our bank, we do this by means of an operating budget worked out together by the farmer and a lending officer or agricultural field man. Each production expense is

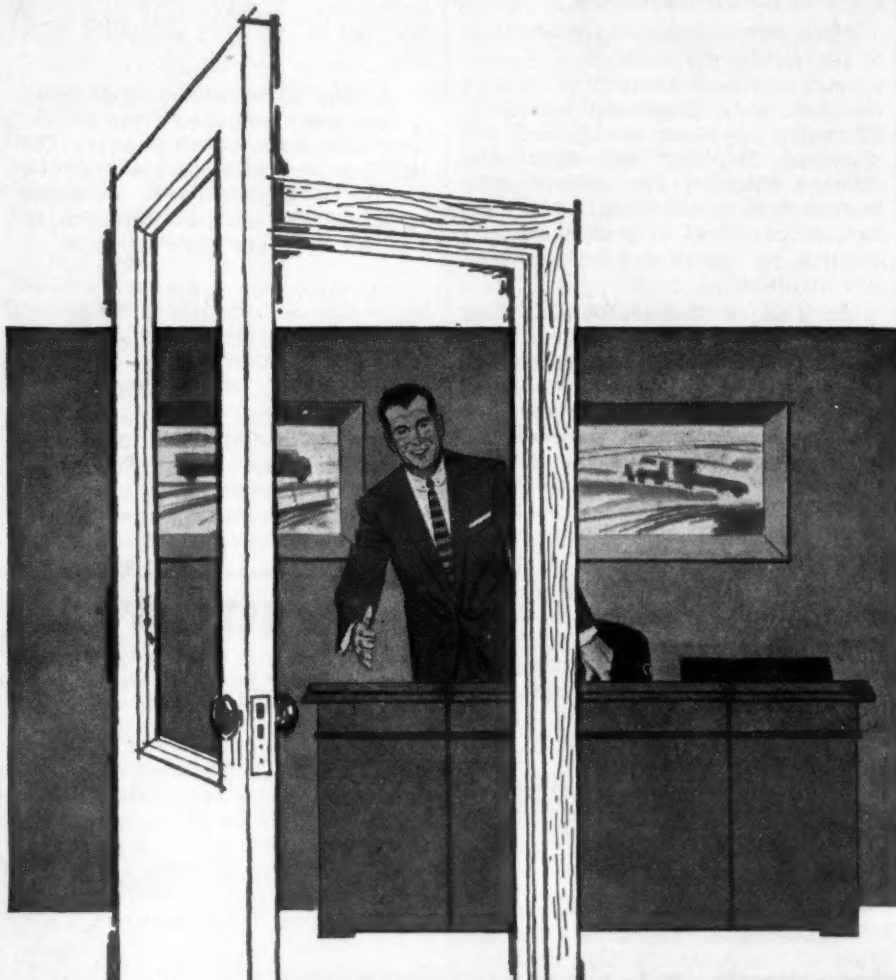
CROPLIFE, April 1, 1957—19
itemized and all potential income calculated.

If, as a result of this analysis, a probable pay-out with a reasonable cushion is not indicated, the banker had better withdraw unless there is another source of income. It is a service to no one to plunge a person into debt when little opportunity for a profitable outcome exists for the venture.

The history of increased borrowings by farmers made necessary by increased costs, the use of vastly more production goods such as machinery, equipment and chemicals, and the enlarging of farms, in itself speaks well for the helpful relationship between lender and borrower.

RETIREES FROM DU PONT

WILMINGTON, DEL. — Walter Dannenbaum, vice president and member of the executive board of E. I. du Pont de Nemours & Co., Inc., retired as of April 1 after a career of nearly 43 years with the firm.



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James E. Iliff

James E. Iliff Promoted By Davidson-Kennedy

ATLANTA—Appointment of James E. Iliff as vice president-general manager of Davidson-Kennedy Associates Co. has been announced by A. T. Kennedy, president. In his new assignment, Mr. Iliff will direct the Chicago office of the engineer-contractor firm, specializing in the design, procurement of equipment, and erection of chemical process plants and facilities.

Mr. Iliff, a chemical engineering graduate of Iowa State College, was formerly chief process engineer of the Blaw-Knox Co., chemical plants division, Midwest headquarters. At Blaw-Knox he organized the chemical process engineering department and pioneered that company's entrance into the design and construction of fertilizer plants.

Since 1942, Mr. Iliff has been active in research, development, design, construction and operation of chemical process plants, including atomic energy, solvent extraction of soybeans and cottonseed, fatty acid, soap, nitric acid and fertilizer. He joined Davidson-Kennedy Associates in January.

Chemical Sales Clinic Planned in New York

NEW YORK—The sixth annual sales clinic of the Salesmen's Association of the American Chemical Industry (SAACI) will be held Oct. 14, at the Hotel Roosevelt, New York, it has been announced by Vincent L. Rebak, SAACI president. Mr. Rebak is New York district sales manager of Grace Chemical Co., New York. Chairman of the SAACI sales clinic for 1957 is Sam F. Teague, Jr., New York district sales manager, Inorganic Chemicals Division of Monsanto Chemical Co., St. Louis.

Other members of the committee include W. B. Beeson, Jr., New York district manager, Diamond Alkali Co., Cleveland; James E. Shand, assistant manager, chemical sales department, Barrett Division, Allied Chemical & Dye Corp., New York; Harris C. Miller, New York district sales manager, Hooker Electrochemical Co., Niagara Falls, N. Y., and Raymond C. Tower, phosphate sales manager, Westvaco Mineral Products Division, Food Machinery & Chemical Corp., New York.

CHAMBER APPOINTMENTS

SAN FRANCISCO—Two representatives from the chemical industries were recently named section chairmen of the industrial department of the San Francisco Chamber of Commerce. E. D. Maloney, president of the Chamber of Commerce, appointed L. N. West, executive vice president of Wilson & George Meyer & Co., and Roy M. Meiklejohn, director of business operation of the General Chemical Co., as new section chairmen.

Nitrogen Ups Corn Yields on Muck Soil in Indiana

LAFAYETTE, IND.—Two Purdue University research scientists have found that high corn yields can be produced on muck soil having a high water table. S. A. Barber, agronomist, and H. T. Erickson, horticulturist, were able to produce 126 bu. per acre with a 16-inch water table. An application of 120 lb. per acre of actual nitrogen in fertilizer made this possible.

The experiment was conducted in 1956 on Purdue's Muck Experimental Farm located in northern Indiana near Walkerton.

Mr. Barber and Mr. Erickson used 16, 24, 32 and 40 inch water table levels in the experiment. The levels were maintained by the use of ditches containing water. The different water levels were maintained automatically by means of pumps.

In the experiment, four different rates of nitrogen fertilizer for corn were used. The rates were 0, 30, 60 and 120 lb. per acre of actual nitrogen.

At the 16 in. water table level, yields were increased from 66 bu. per acre with no nitrogen to 126 bu. per acre with nitrogen. At the 24 in. level, yields were increased from 76 bu. with no nitrogen to 104 bu. per acre with nitrogen.

Average yields per acre were 106 bu. at the 32 inch water table level and 100 bu. at the 40 inch level without added nitrogen. Yields at these two levels were not increased by applying nitrogen fertilizer.

From a conservation standpoint these results are important because they involve saving highly productive soils, the agronomists said. They explained that when organic soils such

as muck are drained and cropped they shrink rapidly at first and later up to one inch per year. A muck soil may shrink or settle as much as two or three feet in 20 years.

Conservation of muck will result in a relatively high water table is maintained. To get high yields of corn with a high water table, supplemental nitrogen fertilizer is needed. Higher yields were obtained with the high water table and nitrogen than by any other combination of treatments, the agronomists said.

Insect Activity Under Way, Indiana Reports

VINCENNES, IND.—Generally, insect activity in orchards has been slow and will continue slow until warmer weather prevails. There has been little movement of insects that attack peaches, such as tarnished plant bugs, stink bugs and plum curculio, at Vincennes.

Green apple aphids have hatched and are feeding at the bud tips of Duchesne. Overwintering aphid eggs are more abundant than usual in the area. Species of eggs present have not been identified.

No hatch of European red mite eggs is apparent. Carryover of eggs is light to moderate in most orchards. Overwintering eggs are exceptionally heavy in large scale experimental blocks where ryania was the sole insecticide used in the summer spray schedule. Eggs are very abundant in Damson plum orchards.

Although infestations of forbes scale are generally light in apple orchards, light to moderate infestation have been observed in several orchards. Populations are slightly higher than they were in the spring of 1955. Staymen and Winesap are the varieties that are most frequently infested.—D. W. Hamilton.

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Earl Straub

Grand River Division Appoints Representative

TULSA, OKLA.—Grand River Chemical Division of Deere and Co. has announced the appointment of Earl Straub as sales representative for Missouri and surrounding area. The new appointee is a graduate of the University of Missouri where he received his major in soils. From 1943 to 1948, he served as a county agent, and from 1948 until 1952, he operated his own farm. He then took a position with the administrative department at the Missouri state department of agriculture, which he held until his present appointment with Grand River Chemical. In his new duties, Mr. Straub will represent the company's full line of nitrogen products including "Vitrea," 3% nitrogen fertilizer, urea feed compound, John Deere solutions, and anhydrous ammonia, according to John R. Taylor, Jr., sales manager.

100th Soil Laboratory Starts in Missouri

COLUMBIA, MO.—Early this year, Missouri's 100th county soil testing laboratory began accepting samples in Marion County, says O. T. Coleman, University of Missouri extension soils specialist. This is the result of 10 years' progress since the first labs went into operation in Carroll, Monroe, and Franklin Counties in 1946.

Big move in the lab program really began in 1948 when 25 labs went into operation.

In 1951, when the 75th county laboratory was set up, every county either had its own laboratory or had access to one in a neighboring county.

All laboratories are financed locally. Since it costs \$1200 to \$1400 to set up a modern lab and a considerable amount to keep it in operation, some counties prefer to take their soil samples to a neighboring lab. The last few years the number of soil testing labs going into operation has been limited to approximately one a year.

One other county—Jefferson—is currently collecting funds for its own soil testing laboratory.

The wide effect of the labs can be seen in their use. Last year, 103,000 samples were tested. The previous year, the number was 102,800. These samples were brought to labs by more than 112,000 farmers. And in 1956, the samples represented tests on approximately 1,775,000 acres of land.

New Chemical Firm Formed in Chicago

CHICAGO—The newly organized Glenn Chemical Co. will have its offices at 2735 No. Ashland Ave. in Chicago. The firm was incorporated for the purpose of manufacturing a new chemical insect repellent trademarked Tabutrex.

S. 11 TESTIMONY

(Continued from page 1)

prive a seller of the "vital right to meet competition or to so severely restrict it that it loses its significance."

S. 11, a bill to amend the Robinson-Patman Act, would prevent a seller from lowering a price to an individual customer if such an act would lessen competition or tend to create a monopoly—even though such a reduction in price were made, in good faith, to meet a competitor's price.

Mr. Conner said that S. 11, in effect, would severely restrict the right of a manufacturer to meet an equally low price of a competitor.

"The proposed legislation would jeopardize some of the present marketing practices upon which the sale of fertilizer and fertilizer materials are dependent," Mr. Conner said.

"There has never been a proceeding in the fertilizer industry based upon a violation of the Robinson-Patman Act, in so far as we have been able to determine. We know of no facts to support an inference that there are at present predatory competitive practices which are being masked by the 'right to meet competition' proviso. To the contrary, we believe this right to meet competition gives to the fertilizer manufacturer the right to compete for the market in the largest geographical area within which he can market and make a profit.

"On the other hand, there are sound reasons for feeling that the farmer has been the beneficiary of the present vigorous competition under which fertilizer is sold. The price of fertilizer has advanced less than that of any other commodity bought by the farmer.

"Fertilizer prices are now only 150% of what they were during the 1909-14 base period as compared with 290% of the base period for other commodities purchased by farmers."

Mr. Conner testified further:

"This right to meet competition is an integral part of the marketing of fertilizers. It is essential that it remain a part of this system, particularly because of the changing conditions resulting from the soil bank program.

"There is no evidence of its misuse in the fertilizer industry. If it should be, there are believed to be adequate means under the present Robinson-Patman Act to correct any such misuse. On the other hand, there are sound reasons for feeling that the proposed legislation would jeopardize some of the present practices which are a vital part of our distribution system."

Pollard to Distribute Krause Equipment

HUTCHINSON, KANSAS—The Krause Corp. here has announced the appointment of Pollard Manufacturing Co., Minneapolis and Sherburn, Minn., as distributor for Krause-Liberty hose pumps. The Minnesota firm now will be handling pull-type trailer applicators with Krause-Liberty hose pumps, hose pump units for tractor mounting and hose pump conversion kits.

New Headquarters

STAMFORD, CONN.—Dorr-Oliver Inc. has recently broken ground for construction of a new \$2½ million worldwide headquarters in Stamford, Conn. Located on an eighteen acre landscaped tract, the new building will provide 120,000 square feet of office space for the estimated 550 home office staff members of the worldwide engineering organization. Target date for occupancy is May 1, 1958.

Diamond Alkali Sales, Earnings Set Records in 1956

CLEVELAND—With sales and earnings of Diamond Alkali Co. reached record peaks in 1956, according to the company's 1956 annual report published March 26.

Raymond F. Evans, chairman and chief executive officer, and John A. Sargent, president, reported that "sales at a new high level for the fourth successive year amounted to \$121,261,571, a 10% increase over 1955.

"Net income totaled \$10,380,141, or \$3.83 per share, a 23% gain over 1955 net income of \$8,442,908, or \$3.11 per share when adjusted to the 2,691,906 common shares outstanding at the end of 1956. Earnings are after a special deduction of \$765,000, or 28 cents per share, reflecting accumulated losses since March, 1955 in Diamond Black Leaf Co., an associated company, not consolidated."

Expenditures during the year for research, development and exploratory engineering activities, totaled \$3,846,000, or 3.2% of sales, according to the report, which adds:

"Diamond research in recent years has yielded a number of potentially significant developments, including some which were reflected for the first time in 1956 in the operation of our own plants and in key industries.

On the subject of exploratory research, the report says that Diamond's exploratory research department has synthesized novel chemicals that "show considerable promise as insecticides, weed killers, fungicides and nematocides, which hold substantial economic significance and growth potential. Still other new chemicals under investigation show interesting pharmaceutical, dye assistant, and sanitizing properties."

Elsewhere in the report, the steady-

ly increased importance of the development and growth of Diamond's organic chemicals business in recent years is indicated. "In 1946, sales of organic chemicals totaled \$1,050,000; in 1956, they generated a volume of \$23,900,000. They represent about 20% of the 1956 Diamond sales dollar compared to 3% just 10 years ago."

Southwest Weed Found Source for Cortisone

WASHINGTON—A weed that infests much arid rangeland in the southwestern United States contains a substance that can be converted into cortisone, according to U.S. Department of Agriculture chemists.

This plant, Agave lechaguilla, commonly called lechaguilla, is scattered in sparse to heavy stands over millions of acres in the Big Bend area of Texas and elsewhere in the Southwest. Other plants have been found which are richer sources of chemicals for cortisone, but lechaguilla is judged especially promising because it is available in such profusion within U.S. borders.

Cortisone is widely used in treating arthritis, inflammatory eye diseases, asthma and other painful ailments. Lechaguilla may also be used in producing newer hormone-like drugs. These drugs appear to have fewer undesirable side effects than cortisone or other hormones, possibly because they are about five times more active and can thus be used in much smaller doses, USDA said.

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INDUSTRY LOOKS AT NEW BILL . . .

Hazards Seen in Kefauver-Patman Measure

Many mousetraps against the efficient operation of business are seen in the Kefauver-Patman Bill (S.11), hearings on which are being held in Washington. The measure would prevent a seller from lowering a price to any individual in any part of the country if such an act would substantially lessen competition or tend to create a monopoly, even though such a reduction in price were made in good faith to meet a competitor's price.

The ramifications of such a law are of such scope as to cause all industry, including the agricultural chemical trade, to take a long, sober look at what it would mean in the day-to-day operations of business.

If a company should act in good faith and lower the price of DDT, or nitrogen, or potash or any other commodity to meet local competition, there is no way of knowing, under the proposed legislation, whether the act might be regarded as a substantial lessening of competition or "tending to create a monopoly," as the law states. In other words, the plea that a price reduction were done in good faith to meet a local situation, would not rescue the company from possible prosecution.

As the law stands now, a company may adjust prices in an area to meet competitive quotations, as an act of good faith without wondering if the act might have serious legal consequences at some future time.

The significance of the proposed new legislation on the fertilizer industry, as an example, is not a thing to cheer about. What would be the effect on potash producers who must ship from mines in New Mexico to eastern markets and meet the competition of imported goods in Atlantic ports? Whatever would be the lowest quotation in any area might have to be the price throughout the nation on any commodity.

The situation on highly-competitive nitrogen products would be even more awesome with restrictions on meeting competitive prices.

Pesticidal products, too, would be difficult items to sell under provisions of the new bill. The possibility of having to operate inflexibly at local levels is indeed unthinkable.

Testimony before the subcommittee of the Senate Judiciary Committee on antitrust and monopoly legislation has brought out some of the facts about how badly such legislation would affect the chemical industry as a whole.

Henry H. Fowler, attorney representing the Manufacturing Chemists' Assn., protested the provisions of S.11, stating that such a law restricting the right to compete in good faith is not consistent with wise public policy designed to preserve and make workable a free competitive system. "Our law should remain sufficiently clear so that an ordinary businessman may avail himself of the right to compete by meeting a lawful price offered by a competitor without being put in the peril of being later declared a law breaker by subsequent and unforeseeable events or effects of that competitive act," he declared.

The MCA representative put into clear focus the particular effect that the passing of S.11 would have on the chemical industry. Since much of what he pointed out as being true of the chemical industry as a whole is applicable to our own segments of that trade, some of his testimony seems appropriate to review here.

He told the Senators that the great diversity of competition among producers of chemicals makes it extremely difficult, if not impossible, to determine whether, in a given case, the meeting in good faith of a

lower price of a competitor to a given customer without lowering the price to all may "substantially lessen competition or tend to create a monopoly" at the manufacturing-seller, or so-called primary level.

"Despite the various levels of competition in the manufacture of chemicals described above, the actual selling of many chemicals is largely a matter of price and service competition," he said. "This is due in great part to the fact that, in many areas and segments of the industry, the versions of a given chemical manufactured by different producers, are so similar as to be practically identical or interchangeable in use. Caustic soda is caustic soda; chlorine is chlorine.

"As a result of this similarity of competitive products, which is both natural and necessary in view of the nature and further uses of chemicals, price is the key to competition. Competitor A must meet the price of Competitor B if he expects to continue to compete with Competitor B for all or part of the trade of Customer X. Whatever dissimilarities of product exist in a developed and utilized chemical, they are not likely to provide a sound basis for Customer X to continue to pay to Competitor A a higher price than he would have to pay to Competitor B.

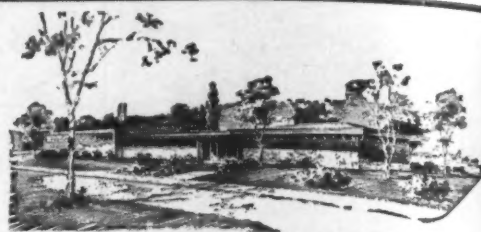
"This is not true to the same degree in key areas of competitive manufacturing where the products are differentiated and price competition is only one phase of competition. For example, the customer does not buy an automobile solely in terms of the cheapest price. He takes into account type, size, quality, style, trim, and all that goes into differentiating one automobile from another, as well as the price. The seller of one make of automobile or watch or radio must meet the competition of another maker of another type of that product by providing a comparable value, not the same price.

"Because of this characteristic of heavy emphasis on pure price competition which pervades much of the chemical manufacturing industry, any law or regulation that limits price competition in the sense of preventing Competitor A from meeting the price of Competitor B to Customer X, dries up and inhibits a principal source of competition. It is the adjustment of a price by a manufacturer to his competitor's new price that both enables him to stay in business, gives price fluidity and flexibility, and avoids the price rigidity that represents a hardening of the competitive arteries."

Mr. Fowler gave the committeemen some further matters to consider in connection with the bill. "It is a simple fact of economic life in the chemical industry that it is impossible to determine in advance whether the effect of meeting in good faith the price of a competitor to an individual customer which is less than that generally charged other customers may be substantially to lessen competition . . . in any line of commerce, in any section of the country," he declared. "The fact brought out previously concerning the character of competition at both the primary and secondary levels in the chemical industry makes the legislative approach embodied in S.11 a particularly unworkable one.

"The difficulties and uncertainties surrounding the day-to-day application of this test not in a few, but in many situations which will arise, are very real as those connected with the industry either on the selling or buying side will attest."

The agricultural chemical industry has considerable grounds for opposing S.11.



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DONALD NETH

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Proof that irrigation pays off for Midwest farmers is provided by Elvin Thomas, center, a Richmond, Mo., farmer. Winter wheat from a field which received inadequate moisture is shown as it appeared in mid-March, at left. The lush growth at right, ready for grazing, is from a field which Mr. Thomas irrigated twice. Examining the samples are Dr. Arnold Klemme, assistant director of the Missouri Experiment Station, Columbia, and Dr. Gerald G. Williams of Little Rock, Ark., director of irrigation research for Olin Mathieson Chemical Corp.

Irrigation Called New Production Tool for Midwest Farmers

RICHMOND, MO.—A panel of engineers and scientists told a group of farmers gathered here recently that while the answer to the drought is, necessarily, a change of weather conditions, many farmers today could actually control soil moisture on their farms with what they termed a new farm "production tool."

Dr. Arnold Klemme, assistant director of the Missouri Experiment Station, pointed out that 626 farmers on the state irrigated 46,538 acres in 1956, but he emphasized that millions of acres are suitable for irrigation.

"Even though annual precipitation ranges from 30 inches in northwest Missouri to 50 inches in southeast Missouri, the irregular distribution of the rainfall which frequently occurs during the summer months causes moisture to be in short supply for crop production," Dr. Klemme said.

"Data indicates that it is not the severe drought years alone but that at least nearly every year, moisture limits production of summer growing crops."

The Richmond meeting, sponsored jointly by Olin Mathieson Chemical Corp. and Hamacher's Mill of Richmond, keyed hundreds of others being held to encourage irrigation throughout the East and Midwest. Speakers at Richmond promised scientific irrigation farming will:

1. Remove water as a limiting factor in crop production; double yields of most field crops; increase land values as much as four times; permit farmers in Missouri to practice double cropping successfully, and stabilize farm incomes at high levels.

Dr. Klemme stressed these points:

1. With a growing shortage in America of protein and health foods such as fruit, vegetables and milk, corn belt farmers who irrigate have abundant opportunity to shift to intensive farming with high returns per acre.

2. Irrigation to remove moisture as a limiting factor and the correction of soil fertility deficiencies coupled with good management will enable Missouri farmers to compete favorably with those anywhere in the United States.

Dr. Gerald G. Williams, director of irrigation research for Olin Mathieson, reported at the Richmond meeting that irrigation is not an emergency cure for farm problems.

"Irrigation," he said, "is a farm production tool to be used in the farm program every year so that good

quality crops may be produced at a high level of yield.

"Planned acreage irrigation stabilizes and raises the income of the individual farm family. In addition it has a favorable influence on the whole community."

Those who work on irrigation research, Dr. Williams said, now can write the formula to produce 125 to 150 bu. per acre of corn on any well drained soil. They also can write the formula for carrying three or more cows per acre on irrigated pasture. Many corn belt farmers, he reported, are using this information and proving it can be done on their farms.

Three Ray County farmers at the meeting said they are producing 100 or more bushels of corn per acre with management programs based on irrigation.

Elvin Thomas, growing corn under contract for a hybrid seed producer, averaged 100 bu. in 1955. With more experience, he reported an increase in his average to 109 bu. in 1956. Mr. Thomas said he figured irrigating adds from 20 to 25 bu. to his yield, thus reducing his unit production costs.

Lloyd and Wilbur Smith farm nearly 1,000 acres south of Richmond. Their average yield per acre of corn was 11 bu. in 1956 with one field making 129 bu.

John Wright, irrigating corn for the first time last year, made 100 bu. per acre, double the yield of unirrigated and unfertilized neighboring fields.

Growers Ask Change in 2,4-D Regulations

SACRAMENTO—Tokay grape growers in the Lodi area have petitioned the California Department of Agriculture to effect two changes in regulations covering use of 2,4-D and similar herbicides.

They request that, after hearing, the department prohibit application of any injurious herbicide by ground equipment within any hazardous area between March 15 and Oct. 15 within two miles of any cultivated commercial vineyard or cotton planting belonging to any person other than the owner of the property being treated.

Application by aircraft already is prohibited in the area during that period. The grape growers also asked that the hazardous area around Lodi be extended to the west to include Webb Tract, and Venice, Bradford, Twitchell, Andrus and Brannan Islands at the confluence of the Sacramento and San Joaquin rivers.

G. D. Salisbury Named Bemis Ad Manager

ST. LOUIS—Garth D. Salisbury has been named advertising manager of the Bemis Bro. Bag Co., succeeding A. B. Merriam, who retired Jan. 30. The announcement was made by H. V. Howes, vice president and director of sales.

Mr. Salisbury joined Bemis in 1947 to engage in publicity work. He became associated with the advertising department the following year. After a military leave of absence, 1950-52, he returned to Bemis as an assistant to the advertising manager. He is a 1943 graduate of the School of Journalism, University of Missouri. Upon graduation he was commissioned in the field artillery and served during World War II and the Korean crisis as a member of the staff of the artillery school. Prior to association with Bemis Mr. Salisbury was in the newsroom of radio station KWK in 1946, and became advertising manager of the Messenger Printing and Publishing Co. of Kirkwood in 1947.

Mr. Merriam, who completed 36 years with Bemis, joined the firm in 1921 as a clerk in the Boston office. In 1923 he was assigned to the St. Louis office and to a position in the company's engineering department.

Two years later Mr. Merriam became a member of the Bemis "new purpose" department which was organized to develop new business. Advertising was a function of this new department, and he became the first man in the company's history to devote full time to advertising.

Alfalfa Aphid Found in Texas County

LUBBOCK, TEXAS—The alfalfa aphid has at last made its appearance in Lubbock County. The insect has been reported in several communities, where both alfalfa and clover fields are being damaged.

Growers have been advised by extension service entomologists, F. M. Fuller, Jr., and C. F. Garner, to use parathion and malathion in treating the fields. Also farmers have been asked to check their fields regularly and take immediate control measures when the aphids are found.

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Classified advertisements accepted until Tuesday each week for the issue of the following Monday.

Rates: 15¢ per word; minimum charge \$2.25. Situations wanted, 10¢ a word; \$1.50 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 20¢ per insertion additional charged for forwarding replies. Commercial advertising not accepted in classified advertising department. Advertisements of new machinery, products and services accepted for insertion at minimum rate of \$10 per column inch. All Want Ads cash with order.

HELP WANTED

PROGRESSIVE FERTILIZER FIRM needs additional salesmen, both trainees and experienced, for Illinois, Indiana and Missouri. Excellent opportunity for advancement. Address Ad No. 2561, Croplife, Minneapolis 1, Minn.

PRODUCTION FOREMAN OR MILL SUPERINTENDENT for large New York feed processing firm. Excellent opportunity for man with feed background and initiative. Give full details in first letter. Address Ad No. 2508, Croplife, Suite 3214, 551 Fifth Ave., New York 17, N. Y.

MACHINERY FOR SALE

ONE CARLISLE AQUA CONVERTER, rated capacity 20 ton per hour. Excellent condition. In use one month. Priced below cost. Write for details and price. Address Ad No. 2565, Croplife, Minneapolis 1, Minn.

FOR FAST ACTION AND RESULTS try
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AGRONOMY HEAD

KNOXVILLE — Dr. William D. Bishop, associate extension agronomist, has been appointed head of the University of Tennessee extension agronomy department, succeeding Dr. Webster Pendergrass, dean of the College of Agriculture, it was announced by Dr. Vernon W. Darter, extension director.

Cash in Now on This Amazing Plant Growth Discovery

NEW!

GIBREL

Makes Plants Grow Faster and Bigger Than Ever Before Possible

RESULTS SHOWN IN RESPONSIVE ORNAMENTALS, TREES, TURF, FOOD AND FEED CROP PLANTS

1. Plants grow faster, mature earlier—those requiring "long-days" for blooming, flower early.
2. Size and bulk are greatly increased.
3. Blooms are heavier, and yields are higher.
4. Grasses grow faster, more luxuriantly than with fertilizer alone.
5. Flowering time is advanced—certain biennials bloom in the first year, some annuals bloom as much as five weeks earlier.
6. Seeds are produced earlier, in as little time as six months in such plants as carrots and head lettuce.
7. Dormancy is broken. The requirements for rest period, cold treatment, or variable day length are often by-passed completely.
8. Plants are not set back after transplanting.
9. Fruit set is improved.

GIBREL is the first of the gibberellins to be produced on a commercial scale. It is ready for immediate use in your formulations. Completely unrelated to fertilizers or nutrients, this Merck-developed gibberellin salt is making headlines with its indicated uses in flowers, ornamentals, turf grasses, and trees. Extensive tests indicate phenomenal results in food and forage crops. Chronic toxicity studies, however, have not yet been completed. Therefore, recommendations for use on such crops must await final results of these tests.

GIBREL for Higher Profits

You can start building profits right now with products containing GIBREL. And you can count on Merck—the first basic producer of a practical gibberellin—to assist you with technical and marketing problems.

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GIBREL Heavily Advertised

Merck promotion is pre-selling GIBREL to your customer through a heavy national advertising and promotion campaign. In addition, Merck research is continuing its program to get additional uses for GIBREL. As always, Merck technical service is prepared to aid you in developing your new product, or in adding GIBREL as an ingredient to your present formulation.

GIBREL Easily Formulated

You may use GIBREL in aerosols, powders, and other dry formulations. GIBREL may be present as the only active ingredient or combined with soluble nutrients. Dry GIBREL is stable, readily soluble in cold water, and noncorrosive.

GIBREL Now Ready for Shipment

Merck supplies GIBREL in $\frac{1}{4}$ and $\frac{1}{2}$ lb. containers, and as 10 per cent pre-mix in $2\frac{1}{2}$ and 5 lb. containers. For technical data, prices, or samples of GIBREL, call, wire, or write—Merck & Co., Inc., Chemical Division, Rahway, N. J.

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RAHWAY, NEW JERSEY